

# DISTRIBUTION AGE

THE MAGAZINE OF PHYSICAL DISTRIBUTION

TRANSPORTATION  
WAREHOUSING  
CONTAINERIZATION  
MATERIALS HANDLING

A CHILTON PUBLICATION

JUNE 1961

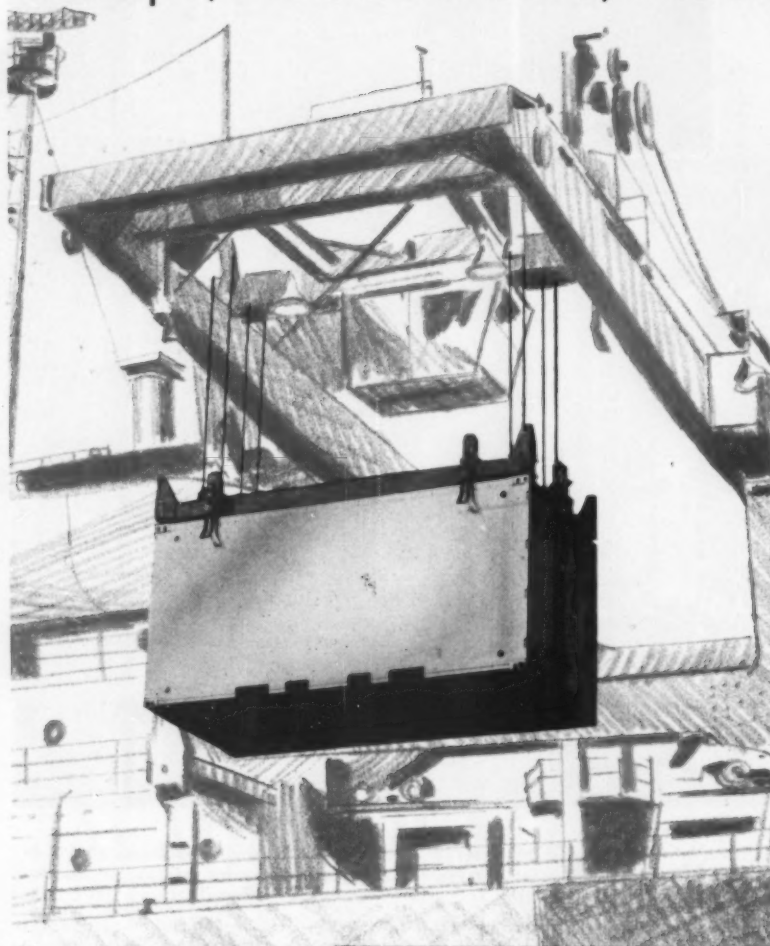
# EQUIPMENT

# REVIEW

INDUSTRIAL TRUCK SPECIFICATIONS

# NATIONAL *SPEEDLOADER* SYSTEM

Service Proven for Operation  
from Terminal to Terminal on  
Ships, Railroad Cars, Trucks and Barges



Time-saving containerized cargo handling is the hottest topic in transportation today. And the National Speedloader System is the talk of the industry — because it's the *first and only fully engineered, fully compatible system of container handling.*

Fully engineered because all components for electrical, hydraulic or semi-automatic-manual operation function as a coordinated system . . . fully compatible because components for lifting, stacking, securing or lashing permit use on ships, railroad cars, trucks or in manufacturing plants.

Today the National Speedloader System is the most widely used method of automatic handling of containers in all fields of transportation. *Automatic handling of containers is the Big Idea whose time has now come — and the National Speedloader System is its Big Name.*

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TRANSPORTATION  
WAREHOUSING  
CONTAINERIZATION  
MATERIALS HANDLING

Vol. 60, No. 6

JUNE 1961

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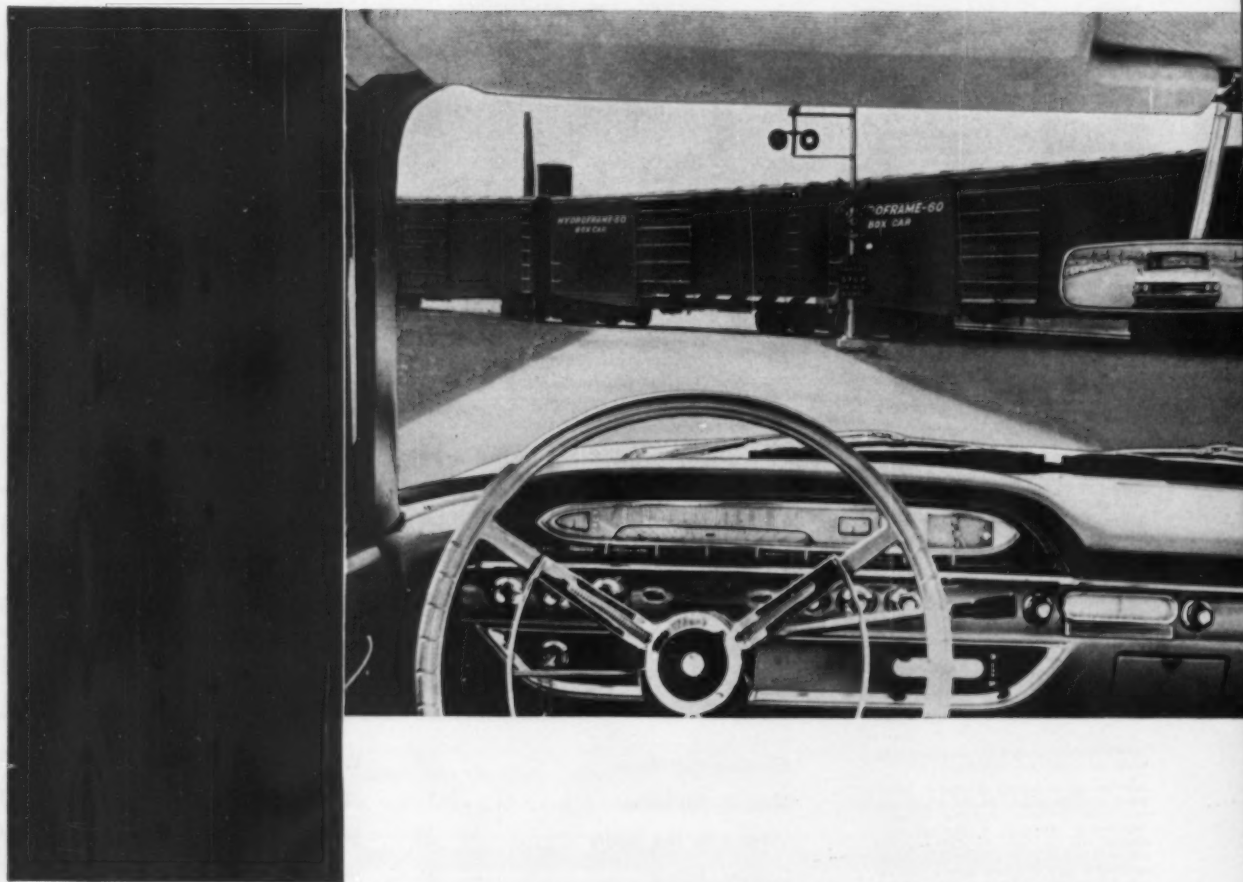
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# FORD

## TESTS HYDROFRAME -60 WITH SHIPMENT OF AUTO-GLASS

Windshield, Back and Side Window Glass Shipment



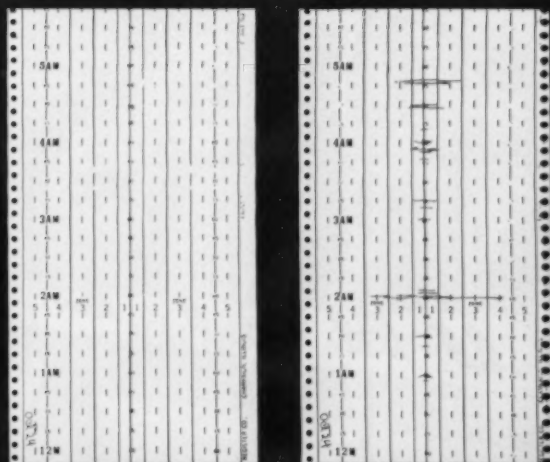
■ The Ford Motor Company, in its constant search for new and better ways of transporting goods and products, cooperated with Pullman-Standard in a test shipment of auto-glass from the Ford Glass Division Plant at Nashville, Tenn., to the Ford assembly plant in St. Paul, Minn.

This shipment—in a Pullman-Standard Hydroframe-60 Box Car—arrived flawless; not one nick, chip or crack could be found in the entire 86,095 pound load. And this was after 870 miles of travel over three roads and 2 car impacts (registered at the coupler) that reached as high as nine miles per hour.

How does the P-S Hydroframe-60 protect fragile loads such as this against bruising impacts? A special underframe which incorporates the new long travel hydraulic cushioning principle takes impacts of 10 mph—and above—and literally swallows them up. They never reach the load!

For details on the Hydroframe-60, or for information on the availability of these cars for your shipments, call or write us today.

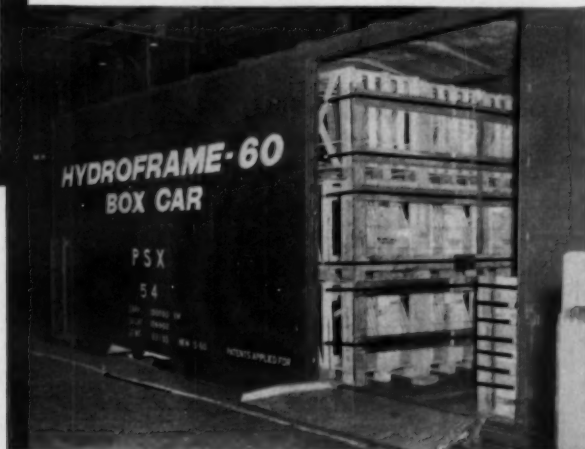
## Handled Like Grandmother's Best Crystal ... Delivered Flawless



**NINE MPH IMPACT AT THE COUPLER: NO IMPACT ON THE LOAD**—Two impact recorders rode the P-S Hydroframe-60—one with the load, the other on the underframe. Two impacts topped 9 mph at the coupler (one is visible on the recording tape at right), others were at 5, 7 and 8 mph. As you can see, none of these impacts reached the load as shown by the impact recorder tape on the far left.

**A 43 TON HANDLE-WITH-CARE LOAD**—Ford's glass shipment in the P-S Hydroframe-60 weighed in at 86,095 pounds. Approximately 26,000 pounds of windshield glass went into the A-end and 59,935 pounds of side and rear window glass into the B-end. Condition on arrival: claim-free!

PATENTS APPLIED FOR



## PULLMAN-STANDARD

A DIVISION OF PULLMAN INCORPORATED  
200 SOUTH MICHIGAN AVENUE, CHICAGO 4, ILLINOIS  
BIRMINGHAM • PITTSBURGH • NEW YORK  
J. C. FENNELLY CO., SAN FRANCISCO REPRESENTATIVE

## HERE'S ANOTHER WAY UNITED'S JET-AGE PLANNING HELPS YOU CUT SHIPPING TIME

Every United jet carries up to 14,000 pounds of freight ... at almost 600 miles an hour. United matches this jet speed with fast ground handling. The Fiberglas containers shown below were developed by United and Douglas, specifically for United's DC-8 Jet. Your shipments are pre-loaded in these containers, and lifted in and out by elevators built into the DC-8. This means your shipments are loaded and unloaded fast, with a minimum of handling. And with the same *Extra Care* United takes with passengers and baggage.

Other examples of United's jet-age planning on the ground include improved terminal facilities, with

more loading and unloading space for trucks. And new, mechanical conveyor systems to move your shipments with speed and efficiency.

Fast handling is one reason it pays to ship via United Air Lines. Other reasons include the fact that United serves more U. S. cities by jet than any other airline. And *every* United passenger flight carries freight. Add United's supporting fleet of DC-6 and DC-7 Cargoliners, and you'll have an idea of the frequency and convenience United offers.

Why not put this jet-age planning to work for you? Call your freight forwarder, or United Air Lines.



KNOWN FOR EXTRA CARE





# CHUTING THE

# NEWS



Albert P. Heiner

## Heiner Honored As Outstanding TM for 1961; Nine Others Saluted for Traffic Leadership

Albert P. Heiner, vice president of public relations and traffic for Kaiser Steel Corp., Oakland, Calif., was honored recently as the Outstanding Traffic Manager of 1961.

The award was presented to Heiner by James D. Edgett, president of North American Van Lines, Inc., sponsors of the competition.

In addition, nine other industrial traffic managers received certificates of notable achievement. They are: Harvey E. Chapman, of S. S. Kresge Co., Detroit; W. C. Cole, Georgia-Pacific Corp., Portland, Ore.; Ernest Emmrich, Hunt Foods and Industries, Inc., Fullerton, Calif.; William L. Fayle, Burlington Industries, Inc., Burlington, N. C.; Richard H. Heilman, A. O. Smith Corp., Milwaukee, Wis.; Eugene Landis, International Minerals and Chemicals Corp., Skokie, Ill.; Paul L. Mills, Producers Grain Corp., Amarillo, Texas; George E. Pratt, Traffic and Transportation Council, Chamber of Commerce of Greater Philadelphia; and James M. Stuart, The Stanley Works, New Britain, Conn.

Heiner currently is serving as chairman of the board of the American Society of Traffic and Transportation. He holds degrees from the University of Utah and the Harvard Graduate School of Business Administration.

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*Net income of major intercity truck lines fell by 47.7 per cent last year, the ATA reports. However, gross revenues rose 3 per cent.*

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## Shoemaker Elected President of Warehouse Group During NARW-TRRF Convention in California

The recent National Association of Refrigerated Warehouses and Refrigeration Research Foundation Convention had registrations of 256. During the San Francisco meetings, the NARW elected Garth A. Shoemaker, of Elmira, N. Y., president.

William B. Haggerty, of Tampa, Fla., was elected vice president, and W. L. Baker, of Seattle, Wash., was re-elected treasurer. New Executive Committee members are H. M. Spradling, Carthage, Mo.; C. P. Metcalf, Austin, Texas; J. G. Snow, Los Angeles; and A. R. Carlson, Chicago.

A panel on labor relations in the refrigerated warehousing industry was held. Jack L. Dawson, executive manager, Pacific States Cold Storage Warehousemen's Association, was joined by R. A. Smarden, manager, and J. Hart Clinton, executive vice president of the Distributors Association of Northern California.

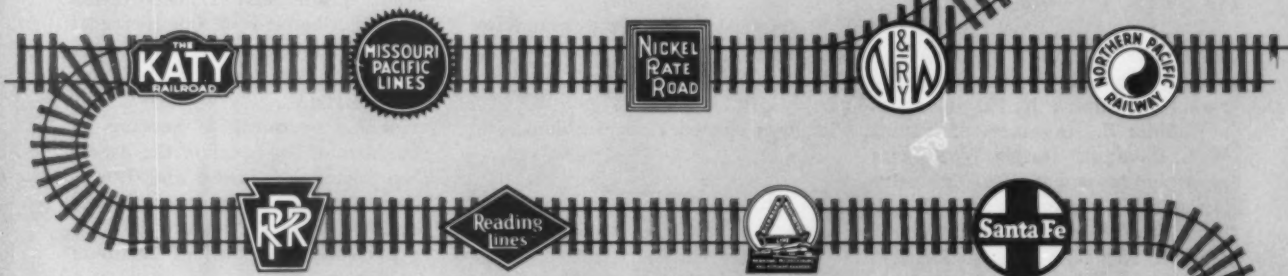
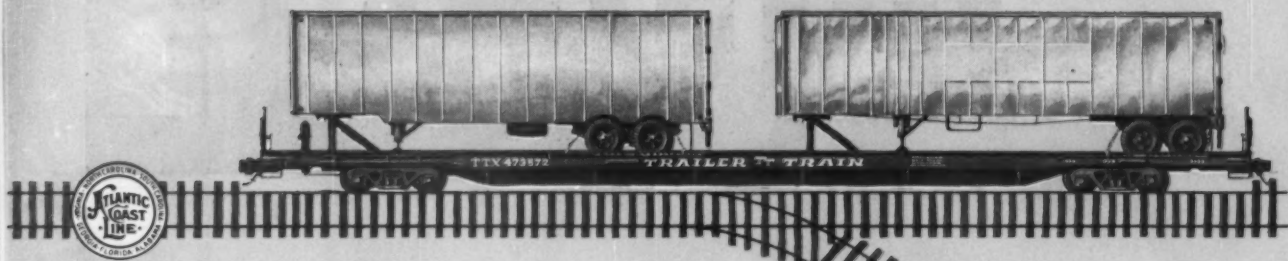
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Dr. Herrell De Graff, Babcock professor of food economics at Cornell, spoke on "The Businessman's Economic Future." He spoke at the Wednesday luncheon. Several discussions were held on "Developments Affecting Your Dock Operations." Topics included "Potentiometers and Standard Thermometers," "Precooling with CO<sub>2</sub>," "Temperature Maintenance in Transit with Liquid Nitrogen," and "Defrosting Indicators."

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*Intercity freight tonnage hauled by truck in January was 4,794,277 tons. This is 6.2 per cent less than the volume for January 1960, the American Trucking Association, Inc., reports.*

(Please turn to page 10)



# TRAILER TRAIN PIGGYBACK

**offers new speed and efficiency  
in nation-wide transport!**

From railroad to railroad—they're always on the move!

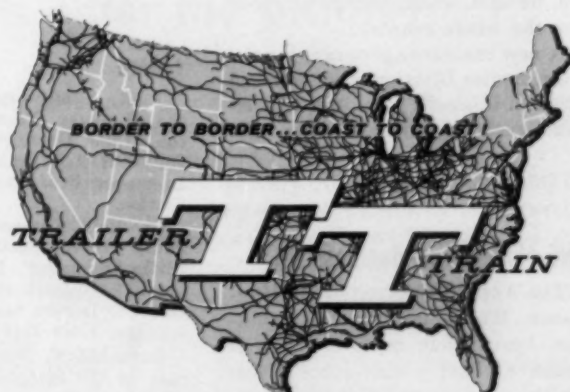
To shippers, this means speedier delivery. To Trailer Train members, it means equipment costs are held to a minimum through maximum use of equipment. To the country in general, it means a greatly improved transport service.

You should be using Trailer Train Piggyback. Find out why it is widely acclaimed by shippers. For complete information regarding piggyback and *your* shipping needs, call any of the member companies listed below.

## MEMBERS TRAILER TRAIN PIGGYBACK SERVICE

Atlantic Coast Line	Gulf, Mobile & Ohio	Reading
Baltimore & Ohio	Illinois Central	R. F. & P.
Boston & Maine	Kansas City Southern	Santa Fe
Burlington	Louisville & Nashville	Seaboard Air Line
Central of Georgia	Milwaukee Road	Southern
Chesapeake & Ohio	Missouri-Kansas-Texas	Southern Pacific
Chicago Great Western	Missouri Pacific	T. P. & W.
Chicago & North Western	Nickel Plate	Texas & Pacific
Cotton Belt	Norfolk & Western	Union Pacific
D. T. & I.	Northern Pacific	United States Freight
Frisco	Pennsylvania	Wabash
Great Northern		Western Pacific

**All for one—and one for all!**



6 Penn Center Plaza • Philadelphia 3, Pa.





## Chuting the News . . .

(Continued from Page 7)

### Record Attendance at AWA Merchandise Group Hears Progress Report on Warehouse Industry

A record 385 members attending the 70th Annual Meeting of the American Warehousemen's Association-Merchandise Division heard that revenues were up in the industry.

C. B. Taylor, of C. B. Taylor and Associates, reported on a survey of operations among AWA members. For 48 per cent, revenues and profits were both up in 1960. In 1959 there were only 34 per cent in this group. Revenues were up and profits down in 1960 for 25 per cent of the warehouses reporting. The comparable figure for 1959 was 21 per cent. This year, 10 per cent reported revenues down and profits up while 17 per cent had a drop in revenues and a drop in profits.

A materials handling demonstration was held to show how representative models of various manufacturers' lines will perform in warehouse situations.

"Financing the Purchase of Handling Equipment" was one of the topics taken up in the Cost Reduction Conference. Speakers were J. Shufeldt, of Automatic Transportation Co.; Tom Davis, of Gerlinger; and Harry Neumann, of Applied Handling, Inc.

W. T. Harrison, president of the National Right to Work Committee, told the warehousemen of the obstacles the average worker faces in trying to control his union. With the power they hold over all workers, he said, union leaders can control the whole country.

A new insurance program for the Merchandise Division was described by John Doggett, president, American Warehouses, Inc., Houston, Tex.

### HHG Movers See Business Up

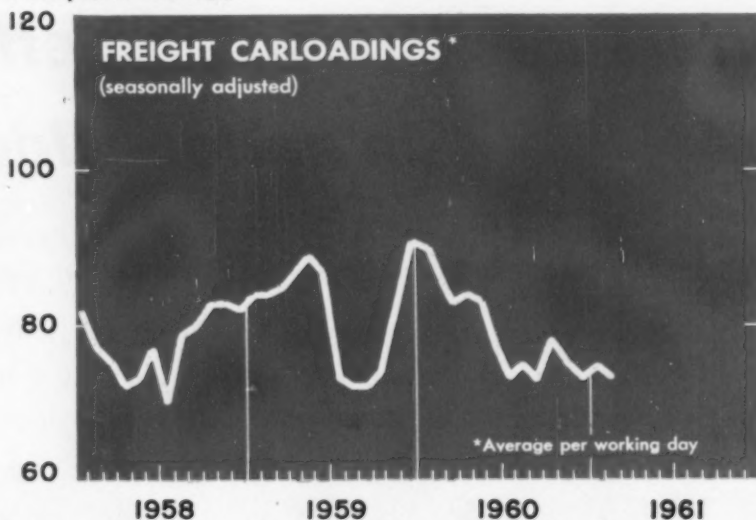
The Annual Convention of Mayflower Warehousemen's Association heard that business is well ahead of last year. John Sloan Smith, president of Aero Mayflower Transit Co., Indianapolis, predicted that 1961 will surpass 1960. Alex S. Naish, president, Al Naish Moving and Storage Co., Cincinnati, is the new president.

### ICC Plans Diamond Anniversary

The Interstate Commerce Commission is beginning plans for its 75th anniversary year in 1962. A committee for the anniversary under Chairman Hutchinson includes Vice Chairman Rupert L. Murphy and Commissioners Howard G. Freas and Kenneth H. Tuggle. The ICC plans to open a museum of objects from the 1880's related to the regulation of interstate transportation.

(Please turn to page 74)

Index, 1947-49=100



## Men in the News

### Traffic

T. A. Hamer—named manager of the Highway Transport Section in the Traffic Department of American Oil Co. R. A. Wilson—replaces Hamer as manager of the Highway Truck Section.

George A. Larson—promoted to the newly created position of sales and traffic manager for the Kellogg (Idaho) Operations of The Bunker Hill Co. Larson has served as traffic manager since 1948.

Raymond V. Wolf—elected chairman of the Automobile Manufacturers-Ocean Rate Committee. He is manager-traffic department of Ford International Division.

Walter L. Peter—appointed traffic manager for Trinity Portland Cement Division. His office will be located in Dallas.

### Dr. Gayton E.

Germane—appointed director-transportation planning and research, U. S. Steel Corp. Dr. Germane is professor of transportation and management, Stanford University Graduate School of Business.

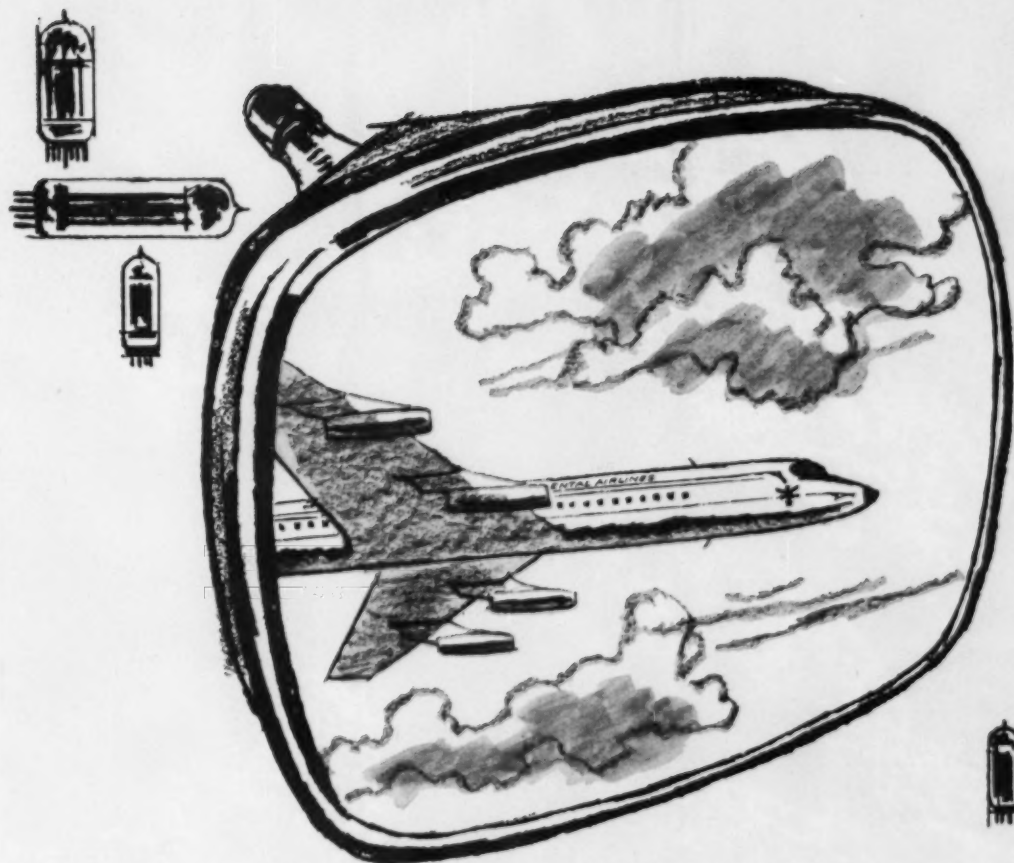
G. D. Starcher—appointed Akron warehousing and shipping division superintendent for The Goodyear Tire and Rubber Co.

H. D. Musick—named traffic manager for all corporate operations by the American-Saint Gobain Corp.

Ronald L. Willey—appointed traffic manager of Pepperidge Farm, Inc., Central Division, with offices in Downingtown, Pa.







*From the Cargo Files of the most experienced jetline in the West:*

## When SYLVANIA ships TV tubes, Continental's Golden Jets enter the picture!

*Cutting costs* is a prime aim of alert corporate management today. Sylvania reduces warehousing and distribution expense by maintaining a major distribution center near Chicago for its radio and TV picture tubes.

When orders arrive from retail distributors in the Midwest and Rocky Mountain areas, Sylvania ships via Continental Airlines. The Golden Jet 707's assure *fast, on-time arrival* in the Kansas City and Denver gateways. Distributors in virtually all areas get *dependable first day delivery* from Chicago.

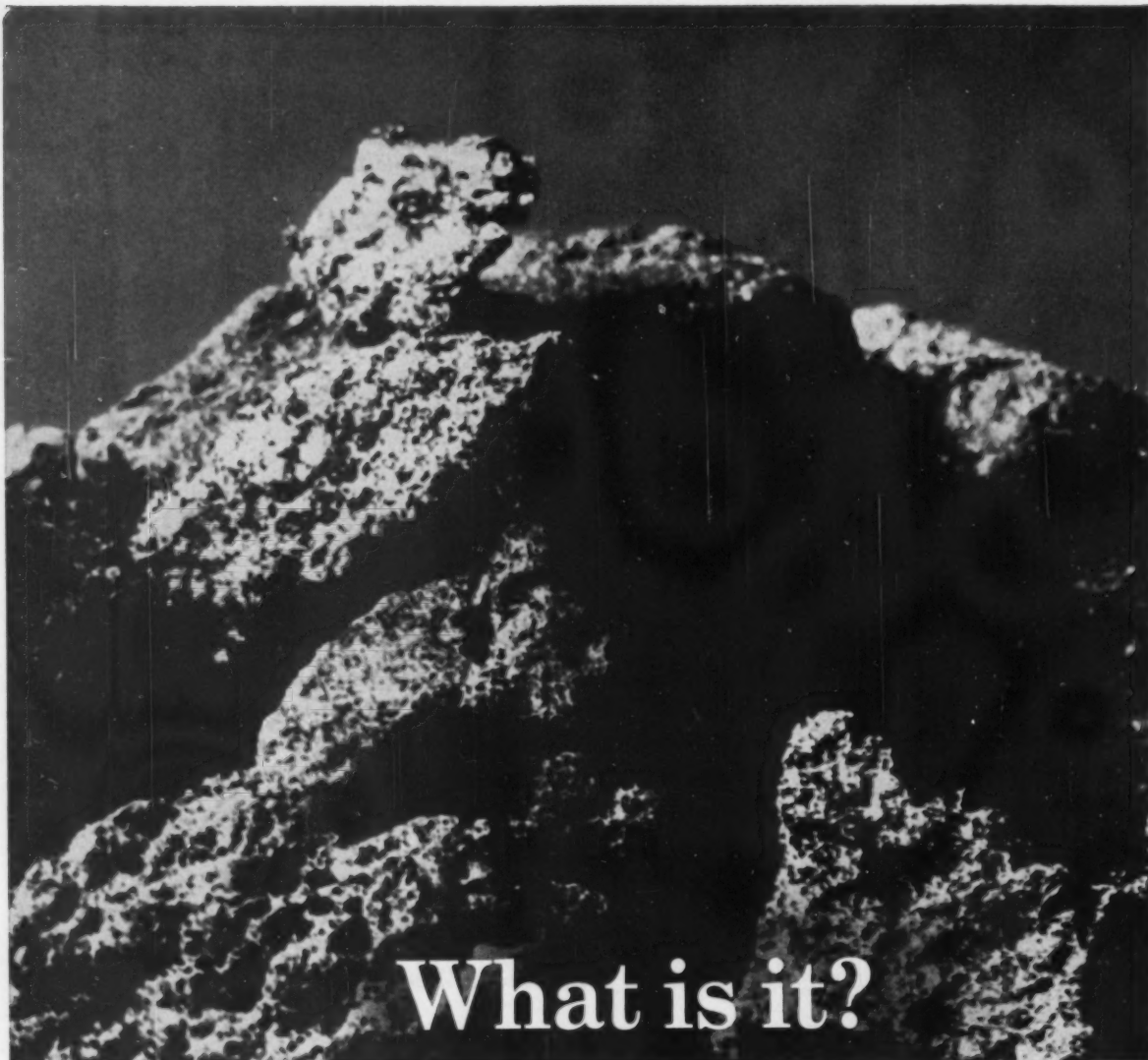
Continental offers many service advantages for shippers. Cargo is ordinarily accepted for the Golden

Jets up to 45 minutes before take-off. Furthermore, you can reserve cargo space on any specific flight... at no extra charge to you.

Interested in delivery efficiency? Continental has a unique way to *prove* the reliability and speed of Golden Jet service to you. For information, ask your local Continental Cargo Manager or write: Mr. Lee Slay, Director, Cargo Sales, Continental Airlines, Stapleton Field, Denver 7, Colorado.



**NEW!** Continental jet cargo service on the Los Angeles-Phoenix-El Paso-San Antonio-Houston route, effective June 11. Six Golden Jet flights daily between Los Angeles and Houston! Plus fast, frequent jet schedules between Los Angeles-Denver-Kansas City-Chicago.



# What is it?

It's not a mountain or a volcanic eruption. Nor is it an undersea reef or a sponge. It's a product the Rock Island railroad has carried millions of ton miles in the last year. The point is, no matter what you ship—whether it's a raw material like this or a finished product like an automobile—you can be sure the Rock Island will spare no effort to transport it carefully, quickly, and economically. Strategically located direct interchanges, push-button yards, split-second communications, modern, trouble-free equipment, and experienced, conscientious personnel all assure fast, efficient shipping. Your Rock Island Representative will be glad to put this effective combination to work for you. Call him.

*What is it? See page 81*



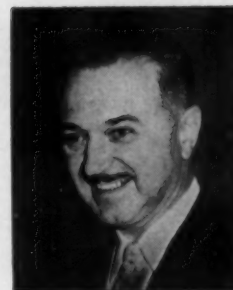
**ROCK ISLAND LINES**

*The railroad of planned progress*

*...geared to the nation's future*

CHICAGO 5

# On the Line—



## Wanted: Trucking Stories

Driving north on U. S. Route 9, in northeast New Jersey, we stopped at a diner for information and a cup of coffee. We sat next to a truck driver. He was such a jolly joker that we found ourself chatting with him within a couple of minutes.

When we answered his "You a traveling man?" question, he identified himself as a driver for a well-known motor carrier. "Used to be an independent," he added.

He described his early sales efforts at door-to-door peddling. "I'd stop at every plant and offer to haul anything anywhere. Some days I'd haul scrap to the junk yard in the morning and move household goods in the afternoon.

"One day, at a truck stop, I got wind of leasing and the co-op racket. That's when I started to make some big dough.

"It cost me \$200 to get in. For that, I got some papers and cards. The papers were for the shipper to sign—that he was leasing my truck. That's when I got to the traffic managers. And that's when I bought a tractor-semi. I was kept busy. When there wasn't a return load, I'd peddle my way back.

"For the guys who couldn't give me a full load, I'd sign them up with our co-op."

Puzzled by several aspects of this yarn, we started to ask questions; such as, "Didn't anybody question your operating rights?"

"Mister, what you don't understand is that I always had the right kind of papers on me to prove that I was a private or co-op carrier. Them traffic boys, especially little companies, would sign anything to cut their freight bill."

"How come you got out of that racket?"

"Well, I had a crackup one night. Rig and everything burned to ashes. After five weeks in the hospital and nine weeks at home, I was over my ears in debt. So, I took this job."

This is the nearest we ever came in contact with phony co-ops and illegal trucking. There must be many other stories that can be told. To bring this problem out in the open, we would like to publish an article combining the experiences of our readers.

Write us a letter, telling what you know about illegal trucking. We'll pay regular rates for all material published.

Title your letter **ILLEGAL TRUCKING**. Address it to The Editor. If you don't want your name published, write "Name Confidential" after your signature. Include, if you can, lease forms and any other interesting exhibits.

## Key Year for Distribution

A good idea never dies. It may seem to but, whether it takes a decade or a generation, it will bear fruit.

Distribution management is an example. We of **DISTRIBUTION AGE** have been trying to sell it since World War II. There were no buyers.

Trouble was, of course, that all products were in great demand then—and for years after. Scarcity-conditioned people were not too concerned about prices. Manufacturers shrugged off rising distribution costs. Today, the situation is reversed.

It is heartening to note that the number of companies adopting the distribution management concept is increasing. Just recently, we learned of two more "blue chip" companies in the process of change to this system. These big fellows move slowly but surely.

Distribution management also is being accepted by our contemporaries to the North. Last February, the Canadian Industrial Traffic League conducted an inspiring distribution management seminar.

(A news story of this meeting in the *Financial Post*—a business newspaper of over 90,000 circulation—carried this bold, two-line, three-column headline: "Look For This New Man To Save You Millions.") Our good friend R. Eric Gracey, general secretary of the league, is to be congratulated.

On this side of the border, distribution management continues to hold the interest of the national traffic and transportation associations. More important, real hot fires are blazing out in the "sticks." A number of local clubs and chapters have had some excellent physical distribution seminars. Many more are scheduled—locally and nationally.

To miss these meetings is to fall behind the times. This is a key year for progress in distribution management.

*Her Greene*

EDITOR

**AMERICAN STEVEDORES'** lift trucks sometimes work 'round-the-clock to help cut ship "turn-around" time. Loads range up to 8,000 pounds. Turns are tight and piers are often littered with scrap. The company's dollar-saving tire choice: the B.F. Goodrich Steel Protected industrial pneumatic.



## CARGO SAILS SMOOTHLY on B.F. Goodrich industrial tires

### FOR 20 YEARS AMERICAN STEVEDORES HAS PUT BFG TIRES TO WORK ON THE WATERFRONT IN NEW YORK

A fleet of 650 lift trucks rumbles along the miles of docks in Brooklyn, Newark and Manhattan, keeping cargo on the go between ship and warehouse. The fleet is operated by American Stevedores, Inc., who for 20 years have relied on B.F. Goodrich industrial tires to speed freight handling.

**A FREE B.F. Goodrich TW Analysis can save you as much as 50% on industrial tires, as much as 20% on maintenance costs. Mail the coupon today.**

*The B.F. Goodrich Company  
Dept. TW-842, Akron 18, Ohio*

Please send me additional information on your free Tire and Wheel Analysis Plan.

Name \_\_\_\_\_

Company \_\_\_\_\_

Street \_\_\_\_\_

City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_

The B.F. Goodrich Tire and Wheel Analysis Man keeps tabs on tire performance—recommended a switch to new BFG Steel Protected pneumatics when scrap materials on docks started causing problems. The Steel Protected industrial tire is built with 2 plies of steel cable under the tread. These cables shrug off tire-killing impacts and punctures. American Stevedores reports B.F. Goodrich tires give an average of 2½ years' service on the original tread!

Why not take advantage of the dollar-saving services B.F. Goodrich Tire and Wheel Analysis Men offer. Without cost or obligation they'll study your materials handling setup—then recommend the tires that will give longest service at lowest cost. This advice is unbiased because B.F. Goodrich makes a complete line of industrial tires.

Are you getting the most service possible for your tire dollars? If you have any doubts, mail the coupon. The BFG Tire and Wheel Analysis Service is *free*. A special BFG consulting service is available to manufacturers of materials handling equipment.

***Specify* B.F. Goodrich tires when ordering  
new equipment**



**B.F. Goodrich**



# CONTAINERIZATION... PACKAGING

## Composite containers cut packaging costs for chemical firm

A 60 per cent reduction in initial container cost is only part of the pattern of over-all low packing-handling-shipping costs at the Mobile, Ala., warehouse of F. H. Ross and Co., chemical firm with headquarters in Charlotte, N. C.

By converting, where possible, to the use of relatively inexpensive composite containers consisting of 15-gal. polyethylene drums in octagonal protective wirebound over-wraps to replace 13-gal. glass carboys in heavy wood cases, R. M. Counts, Mobile branch manager, and Thomas Mattis, warehouse manager, brought about many economies.

Initial container cost reduced by over 60 per cent; pallet capacity increased by over 125 per cent in gallonage and doubled in number of containers; storage area needs reduced appreciably by being able to high-stack loaded pallets; and shipping container tare weight reduced 77 per cent, or from 70 to 15.5 lb per container.

### Plane Helps Ship



That the show must go on was evident when a 23,000 lb ship's crankshaft was loaded aboard an American Airlines airfreighter recently for shipment to San Francisco. From there it was flown by Pan American to Japan to replace a broken crankshaft in a crippled freighter



Polyethylene drums in octagonal wire-bound over-wraps being acid filled



Fork truck high-stacks pallets loaded with composite packs in warehouse

Drums will be filled with acid by hose directly from the trailer in safety

Chemicals distributed by the Mobile warehouse are shipped there from the manufacturers' plants by tank trucks or tank cars. Carboys or drums standing on pallets are filled beside the bulk carriers.

A pallet accommodating only six square 13-gal glass carboy cases holds 12 snugly nesting octagonal composite wirebound-polyethylene containers. Thus, pallet capacity is doubled as to number of containers, but gallonage capacity is increased from 78 to 180 gal., or over 125 per cent.

The new octagonal wirebound over-wrap is engineered so that the protruding neck of its cylindrical polyethylene drum is just below the level of the end cleats. This permits pallets loaded with filled containers to be high-

stacked securely. At the Mobile warehouse, they are stacked four high, as high as the ceiling permits.

The filled containers are shipped by common carrier, mostly trucks to F. H. Ross and Co. customers over a wide area.

Mattis and Counts agree that customer reaction to the octagonal wirebound composite container with increased capacity and lower tare weight is highly favorable. Besides reduced freight charges due to the lower tare weight customers who receive the containers in considerable numbers profit from more economical handling and storing.

Polyethylene drums are by Delaware Barrel and Drum Co., octagonal wirebound over-wraps are by Wirebound Box Division, St. Regis Paper Co.

**BETWEEN**

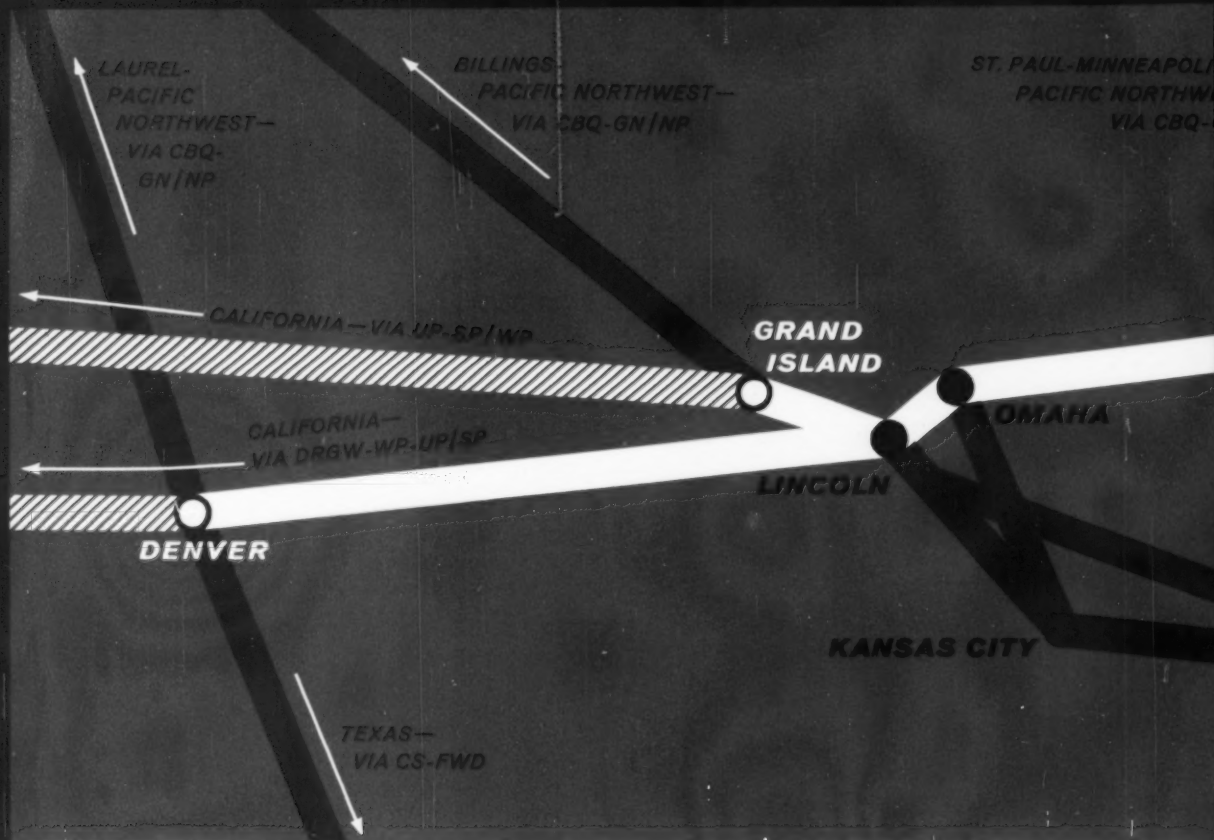
# Chicago *and the* Pacific Coast



ship  
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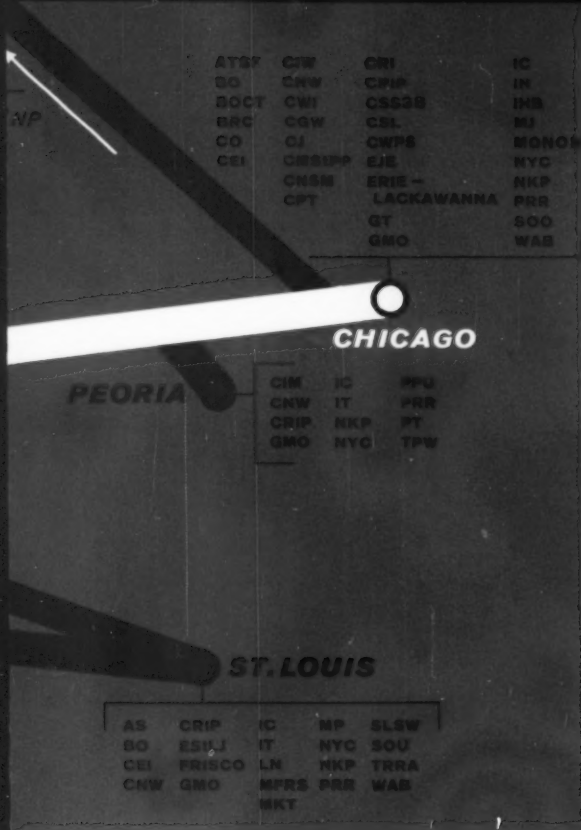
Between Chicago and any West Coast point, Burlington offers unexcelled freight service . . . westbound or eastbound. Check the map . . . check the connections . . . check the schedules.

Then call your Burlington Freight Representative—and get the dependable, high-speed transportation you're entitled to!









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an essential link in tra  
through 22 principal g

***faster freight service...***

# **Ship via BURLINGTON!**



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link in transcontinental transportation, serving the Nation  
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## SCHEDULES

### FROM CHICAGO

*via*

### Denver or Grand Island

DESTINATION	DELIVERY
DENVER	Second morning
SALT LAKE CITY	Third morning
SAN FRANCISCO	Fourth morning
LOS ANGELES	Fourth morning

*via*

### St. Paul- Minneapolis

DESTINATION	DELIVERY
ST. PAUL-MINNEAPOLIS	First morning
SPOKANE	Fourth morning
TACOMA	Fifth morning
SEATTLE	Fifth morning
PORTLAND	Fifth morning
VANCOUVER, B.C.	Sixth morning



Burlington

"Burlington  
is going

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Flexibility...efficient

These are three re  
on-Flatcar transpor  
enthusiastically use  
dustry. The Burling  
affiliate, Burlington  
teamed up to deliver  
ibility, efficiency, an

The growth chart  
effects of this Burlin  
and shows you one t  
we say, "Burlington  
places."

Won't you come a

**BURLINGTON**  
*Everywhere*

Chicago, Burlington &  
Colorado and Souther  
Fort Worth and Denve



on Piggyback  
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LEHITRAIN

efficiency...economy...

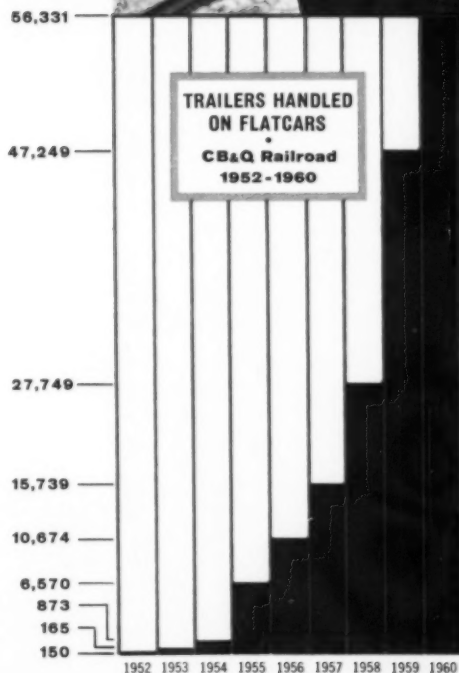
three reasons why Trailer-  
transportation has been so  
ally used by American in-  
Burlington Lines and their  
Burlington Truck Lines, have  
to deliver the ultimate in flex-  
ency, and economy.

h chart at right shows the  
s Burlington cooperation—  
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Burlington Piggyback is going

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**BURINGTON LINES**  
*here West*

Burlington & Quincy Railroad  
Southern Railway  
and Denver Railway







Williams and Company, Inc., Consulting Architects/Schauder and Martin

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Phone your Butler Builder for the full story. See the Yellow Pages under "Buildings, Metal," or "Buildings, Prefabricated." Ask about financing, too. Or write.



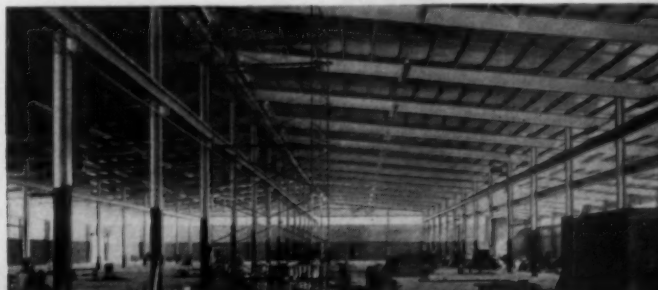
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# LETTERS

TO THE  
EDITOR

## Warehouse Labor Committee

TO THE EDITOR:

Warehousing operators and all industry have a common interest in the most vital question of the day, namely labor, brought vividly to the attention of the United States by the recent strike of 660 tugboatmen in New York Harbor, by setting picket lines around Grand Central Station. Also by halting transportation on the New York Central Lines all the way to Chicago in addition to crippling the Port of New York and bringing untold hardship to practically 7,000,000 people.

The strike concerned two demands: Five tugboatmen must be employed to do the work of three, that all 660 tugboatmen get lifetime guarantees of their present jobs.

The Goldberg-imposed settlement continues the status quo for a year, requiring five to do the work of three and postponing the lifetime guarantee issue.

In June 1959 The Erie-Lackawanna and Long Island railroads decided to wipe out every one of these jobs (oilers) and gave notice. There was no need for oilers aboard diesel engine tugs said the railroads. Oilers, though they work for the railroads, are members of Teamsters Local 518—the Marine Employees Union, Hoboken, N. J. When the companies gave notice, the Teamsters struck.

The case was taken to the U. S. Supreme Court and was sent back to a lower district court. The railroads and the local decided to negotiate. After almost a year and a half they agreed that all oilers who had been on the job would have lifetime job security. They never could be fired or laid off.

When the deadline came for action by other harbor unions which supply crews for the harbor tugs of 11 rail lines here, the Seafarers International Union noted this precedent well. The 11 railroads wanted to drop two crew members. The Seafarers and their fellow unionists struck. This, too, was only the beginning.

The Teamsters precedent has also been noted by another labor organization—Marine Division of the National Maritime Union which mans the regular harbor tugs. Its contract expired Feb. 1. If there is an NMU tugboat strike, all harbor movements will undoubtedly stop, since all other Unions—regardless of pacts previously made—will respect NMU lines.

Such a stoppage will affect most of the Nation. And if railroads attempt to divert freight to other Gulf or Atlantic Ports, NMU picket lines would follow the freight.

There could always be a compromise. Look at what happened when the Teamsters quietly set a precedent for a handful of oilers on the tugs.

Every industry is vitally involved in this issue. Write to your senators and congressmen to change the secondary boycott law. Laws against threatened violence must be enforced. The remedy is not to increase government power in labor disputes, since labor can control the government.

Warehouse Committee  
The Traffic Club of Newark, New Jersey

Watch DISTRIBUTION AGE's July issue  
for . . .

'A Directory of  
Industrial Districts'



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Whatever the destination of your shipment, chances are, a Greyhound is going there anyway... *right to the center of town.* Greyhound travels *over a million miles a day!* No other public transportation goes to so many places—so often.

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**YOCAR SAFE-CARGO** cars in  
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"These YOCAR-equipped cars have proved their worth in reducing transportation damage drastically. They are an efficient car for loading and have been well received by all our consignees. We can't tell you much more except to say we wish there were more in service on railroads."

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*Traffic Manager, Transportation Services,  
Kimberly-Clark Corporation*

These "Safe-Cargo" cars have flush walls and hundreds of anchoring stations, use minimum dunnage, have no loose parts and equipment, and can handle all types of lading. They save loading and unloading time and help shippers and receivers save thousands of dollars every year.

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## Coming Events

- June 1-2—American Society of Traffic and Transportation, Illinois Chapter, Physical Distribution Seminar, Sheraton-Chicago Hotel, Chicago, Ill.
- June 1-3—Materials Handling Equipment Distributors Assn., National Convention, The Denver Hilton, Denver, Colo.
- June 25-29—American Trucking Associations National Accounting and Finance Council, The Denver Hilton, Denver, Colo.
- June 28-30 — International Truck, Trailer, and Equipment Show, Brooks Exhibit Hall, San Francisco, Calif.
- July 25-27—Air Freight Cartage Conference, Edgewater Beach Hotel, Chicago, Ill.
- Sept. 17-20—National Defense Transportation Assn. Transportation and Logistics Forum, The Denver Hilton, Denver, Colo.
- Oct. 3-5—National Assn. of Shippers Advisory Boards, Statler-Hilton Hotel, Buffalo, N.Y.
- Oct. 7-10—Conveyor Equipment Manufacturers Assn. Annual Convention, Ponte Vedra Beach, Fla.
- Oct. 8-13—American Trucking Assn. National Convention, Sheraton-Carlton Hotel, Washington, D.C.
- Oct. 18-20 — Packaging Institute Annual National Forum, Biltmore Hotel, New York, N.Y.
- Oct. 19-21—Southeastern Warehousemen's Association Meeting, Tampa Terrace, Tampa, Fla.
- Oct. 23-26—Private Truck Council of America's Fleet Maintenance Exposition, New York Coliseum, New York, N.Y.

## Warehouse Stores to Top



A new warehouse with floor-to-ceiling stacking enables Midland Cooperatives, Inc., to store twice as much merchandise as was possible in a multi-story building of comparable size. The new building holds approximately 12,000 kinds of items from oil drums to farm supplies. Pallets are stacked 16 ft high by eight Clark fork trucks some of which are equipped with triple-stage uprights

**GROWING...**  
and growing ***FAST!***



THE ROUTE OF  
COURTEOUS SERVICE





# WASHINGTON SCOPE

By Neil R. Regeimbal, *Chilton Washington News Bureau*



**PLAN TRANSPORT CHANGES**—Recommendations for changes in the current government transportation system are expected to begin flowing to Congress soon. The recommendations will be in addition to changes already suggested by the President in all regulatory agencies. In the earlier message, the President asked for changes to insure greater coordination between various agencies and for increased direction from the White House.

**MAGNUSON HITS ICC**—Interstate Commerce Commission is under sharp criticism by Sen. Warren Magnuson, D., Wash., chairman of the Senate Commerce Commission. The Senator accuses the ICC of being "a group of apologists for a deteriorating system." He also charges the commission has failed to implement the National Transportation Policy, contending Congress did not intend that "unrestrained competition live until interstate common carriage died, (nor that) decisions be delayed because they were tough to make." He says his committee will work with the White House to give all forms of transportation "the decisive, efficient, far-thinking regulatory pattern they deserve." However, the senator is opposing creation of a single transportation agency to replace the ICC and other transport agencies.

**STUDY TRANSPORT STATISTICS**—The government's transportation statistics are likely to be overhauled. A House subcommittee on census and government statistics is now gathering background information on these figures. It plans to hold public hearings later in the year. "The need for improvement in transportation data is recognized by both public and private users," comments the subcommittee chairman, Rep. John Leinski, D., Mich.

**SEEK JOINT RATES**—Criticism is mounting in Congress of the alleged failure of the ICC to require water carriers and railroads to establish joint rates and through routes. Sen. Stuart Symington, D., Mo., charges the ICC appears to have "condoned" the evasion of a congressional directive in the Transportation Act to set such rates. He is asking for an investigation.

**ECONOMIC RECOVERY SEEN**—Business will be well into a recovery by mid-year. This is the latest forecast of top government economic advisors. Most of the upturn will be before President Kennedy's anti-recession measures take hold, but they'll help speed the pace later in the fall.

**DEMAND MORE ROAD MONEY**—The Kennedy Administration is fighting hard to get the extra revenue needed to complete the highway program on time. It prefers the higher levies on heavy trucks, diesel fuels, tires and tubes. But it will settle for a 1/2-cent rise in the gasoline tax. Congress is being told that it will not accept a stretch-out in the road-building program, or taking the extra money from general government funds. Highway users, particularly the trucking industry, are pouring mail to Congress opposing the added user taxes on highway users.

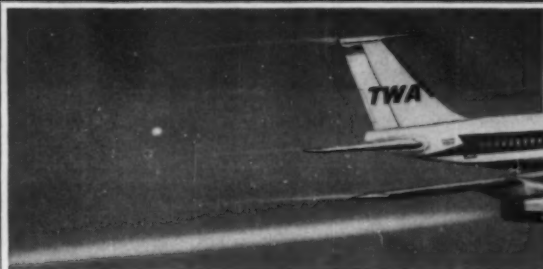
**GRANT POWER TO REORGANIZE**—President Kennedy now has the power to make sweeping changes in the federal regulatory agencies, such as the ICC, without specific congressional approval. The lawmakers have given the White House power to make changes which become law if not vetoed by either house of Congress within 60 days. It is similar to authority granted the chief executive in 1949, but allowed to expire two years ago.

**VEHICLE RENTALS CLIMB**—The truck and car rental business continues to expand. Results of the 1958 census of business show that: Trucks in daily rental totaled 14,800 and those on lease 52,635; truck-tractors in daily rental 1700 and on lease 8000; trailers and semi-trailers on daily rental 2500 and on lease 11,000; passenger cars on daily rental hit 45,500 and on lease 122,100, and utility trailers for rent or lease totaled 40,100.

**TAX BREAK POSSIBLE**—Business firms, including those in transportation, warehousing, distribution, may get a \$1.7 billion a year tax break. Tax savings would go to firms which buy new equipment. Congress appears likely to go along with the President's plan. (It would delay major depreciation reform at least a year.) All firms except utilities could get a tax credit of 10 per cent of the first \$5000 of new plant and equipment expenditures; 15 per cent of spending above their current depreciation allowances; or 6 per cent for spending above 50 per cent of current depreciation.

**RAILS MAP FIGHT**—Nation's railroads are mapping an all-out fight for measures and actions to help them in the battle for business. They want ICC approval of merger proposals, Congress to permit them to own other modes of transport, grant faster tax depreciation on equipment, repeal the passenger excise tax, and continuation of the government's loan guarantee program.





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# NEW PRODUCTS

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on your company letterhead.

BE SURE TO SHOW the . . .

TITLE of the item  
and the product NUMBER.

## Dunnage Pole

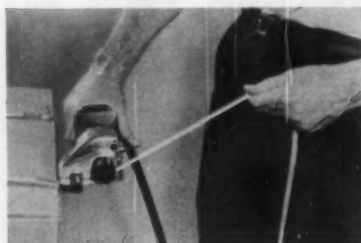


The O'Brien Engineering Co. has a new lightweight cargo lock called Load-Loc. It will lock any size load. It is held securely in place by a simple spring mechanism and can be unlocked by releasing the spring handle. Rubber pads on the end flanges prevent slipping and damage to interiors on roughest roads. This lightweight (14 lb) lock can be used for intercity and highway loads. For more information, write to the editor. Ask for G1.

## Pre-fab Buildings

Butler Manufacturing Co. has expanded and redesigned its present line of prefabricated buildings. The program of redesign puts the accent not only on practicality but also on beauty. The buildings are designed with conventional and flat roofs. The bays in the new line are 24-ft long instead of 20 ft. A wide variety of sizes, shapes, and colors are offered for buildings, trim, and roofs. For information on this beautiful new line of structures, write to the editor. Ask for G11.

## Cord Strapping Tools



American Viscose Corp. has developed two new tensioners—pusher type and a general type—for Avis-trap. Both of these are semi-automatic tools. The strapping itself has distinct advantages over steel in that it is safe, will not snap or damage cartons or contents, and is 80 per cent lighter than steel strapping. Write for details. Ask the editor for G16.

## Angle Protector

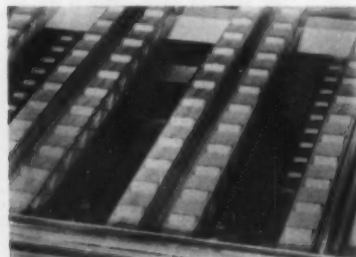
A protector for banded loads has been marketed by Buffalo Machinery Co. It is made of strong plastic that will resist cutting by steel strapping and will prevent damage to corners of delicate loads. It is made for use with  $\frac{3}{4}$ -in. steel strapping. This angle can be nailed without fear of splitting and is constructed to eliminate slipping after the strap is sealed. Write to the editor for details. Ask for G10.

## Strapping Seal



A new strapping seal to be used with painted and waxed heavy-duty  $1\frac{1}{4}$  in. steel strap has been announced by the Signode Steel Strapping Co. The seal is coated with a mastic compound which penetrates the slippery coating of the strap when crimped. For a high-strength, high-impact seal which is as strong as the strap itself, two double-crimped seals are recommended. Write to the editor for more details. Ask for G5.

## Live Storage System



Low-cost live storage to meet a wide variety of warehouse needs is possible with a light-duty roller-conveyor shelf system recently introduced. It is made by the North American Equipment Co. High-density polyethylene rollers are set in self-lubricating steel channels to give easy gravity flow. Wheel spacing:  $1\frac{1}{2}$  in. centers. Maximum load per wheel: 4 lb.

The editor will supply you with details on this system. Write asking for C14.

## Towline Truck Bumper



A bumper for towline trucks that will stop the truck and release the towline when it hits an obstruction is being marketed by SI Handling Systems. This attachment is designed for use with conveyors and assembly line systems. The truck features self-adjusting, self-aligning brakes, high-strength tow pin and shock absorber. Write to the editor for more information. Ask for G18.

## Unit Load Trailer Floor



A new system of loading and unloading Volume Vans and platform units has been introduced by Fruehauf Trailer Co. Unitized loads are carried on multiple fork truck tines into the trailer and placed on the grooved floor, the tines of the truck corresponding with the grooves. A van can be end-loaded without pallets in 15 minutes. Any of Fruehauf's Volume Vans or platform trailers can be converted to this system. Write to the editor for details. Ask for G19.

## High-Lift Fork Truck

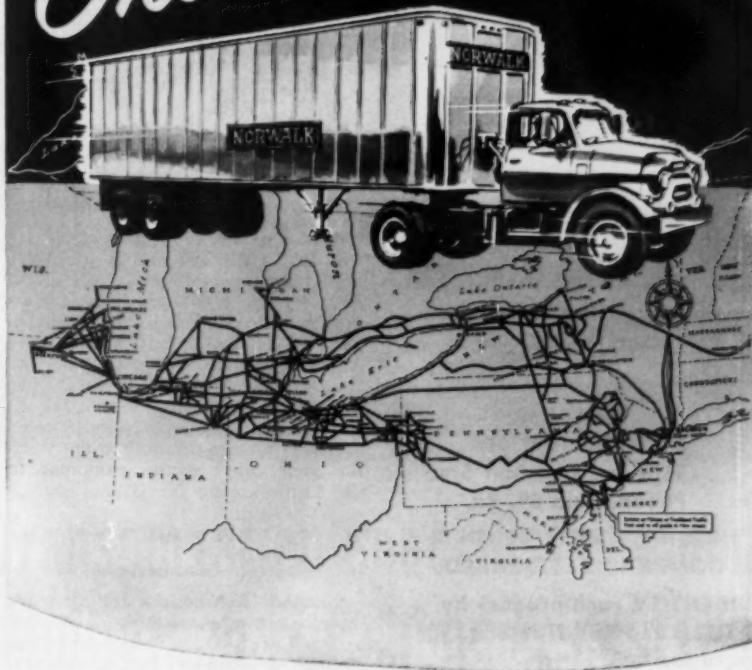


The Barrett-Cravens Co. has a new fork truck. The 24-volt Model TTR is available in capacities of 1000, 1500, 2000 lb with collapsed standard heights of 68 and 83 in. and 106 and 136 in. fork lift heights. It is a three-wheel truck and offers sharp turning radius and stability. The drive train is a single vertical unit placed under the upholstered seat. Also, the mast tilts 2 deg forward and 12 deg back. This automatic drive truck has all controls within easy reach of the driver. Write to the editor for details. Ask for G14.

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TRUCK LINES INC., NORWALK, OHIO

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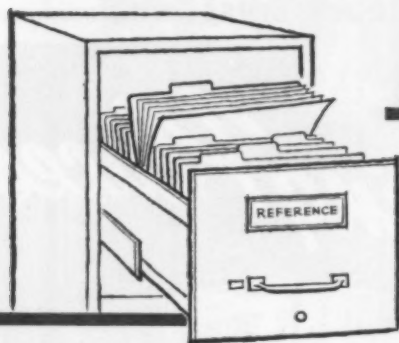
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## Daily Log Book

A 50-book pack of the Guide-On driver's daily log book is offered by Trucker's Specialty Printing Co. for private carriers and small fleet operators. It contains 51 sets of ICC Form BMC 59 and incorporates a clear plastic slide, making possible clearer, more accurate records. Space is provided on each sheet for daily recording of off-duty sleeper berth, driving, and on-duty (non-driving) hours. Write to the editor for a copy. Ask for F7.

## Industry in Oregon

The Planning and Redevelopment Dept. of Oregon has prepared a book about the industrial resources in that state. The total picture is broken down into divisions: finance industry resources, agriculture, distribution, and others. Write to the editor for your copy of this illustrated book. Ask for G45.

## Gas-Power Facts

A new pamphlet on a new slant in fork-lift trucks is offered by Automatic Transportation Co. The report evaluates the gas-electric combination. In this series of trucks a gasoline engine drives a generator which in turn drives a motor to supply power to the wheels. The hydraulic system of the truck is driven off the engine. To get a more complete picture of this system write for your copy of the pamphlet to the editor asking for G33.

## Interchange Instructions

Complete instructions for air-truck interchange are given in a booklet by Air Cargo, Inc. These instructions include procedures for acceptance, rates and tariffs, documents, charges, liability, and others. In your letter to the editor, ask for G43.

## Bulk Handling Containers

A report entitled "Notes on Tote" is available through the Tote System, Inc. The report deals with various models of high capacity bulk shipping containers. Special models and applications are also given. For your copy of this report on metal bins, write to the editor, asking for G42.

## Fork Lift Safety Kit

Towmotor Corp. has a kit designed to make fork-lift truck operators more safety-conscious. The kit includes a handy manual for operators, four safety cartoons, and four lift-truck route posters. All of the posters in the kit attract attention to the most common accident areas concerning fork trucks. The Operator's Guide outlines basic procedures for drivers. To get your kit, write to the editor. Ask for G25.

## Narrow Aisle Trucks



Narrow aisle electric trucks and hydraulic hand pallet trucks are described in a new catalog offered by The Raymond Corp. The 16-page book is il-

lustrated with on-the-job photos showing a wide variety of applications for space saving equipment. Separate pages illustrate the various models available and give pertinent information regarding specifications. You can have a copy. Write to the editor. Ask for F18.

## Annual Warehouse Directory

A 140-page directory of public refrigerated warehouses is available to the public through the National Association of Refrigerated Warehouses. This directory lists all members of the association. Included in the listing are: Company officers, storage capacities, temperature range, rail facilities, services, financial references. This directory is an invaluable help to anyone in related fields. Write to the editor for a copy. Ask for G34.

## Air Shipping Guide

A 25-page book on air shipping and related subjects is offered by the Port of New York Authority. Of special interest is the section entitled Specialized Cargo Handling Systems Developed for All-Cargo Aircraft. This illustrated book also has a section dealing with rates and procedures, air freight forwarders, and other related subjects. It can be yours by simply writing to the editor. Ask for G26.



*Another Interstate System  
success story:*



Addressograph-Multigraph  
multilith duplicator used in A-M's  
FREIGHTRITE billing system.

## How Interstate's Transportation Specialists helped Addressograph-Multigraph cut shipping costs!

■ The first step was to sit down with A-M's traffic department and review the company's traffic program. Working together closely, classifications were carefully checked, routings were re-examined, a close look was given to procedures, handling and labeling. Out of the review came a comprehensive traffic plan that has resulted in substantial savings in shipping costs.

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Interstate System has been able to help many companies — both large and small — effect substantial savings in transportation costs without affecting swift, safe, dependable service — on both inbound and outbound freight. If these are the aims of your company, call the Interstate System Transportation Specialist. He's listed in the Yellow Pages.

*Direct service to the important markets of America  
through 69 modern terminals in 24 states.*

# INTERSTATE SYSTEM

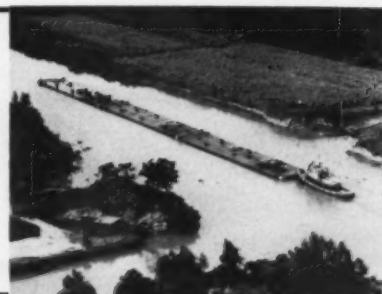


Grand Rapids,  
Michigan  
Canadian Offices:  
Toronto, Montreal

**MORE THAN A TRUCK LINE . . . A TRANSPORTATION SYSTEM**

DISTRIBUTION AGE, JUNE 1961

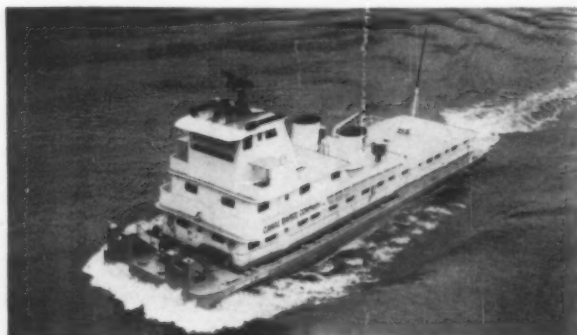
# Freight Transportation



COMBINED ST. LAWRENCE SEAWAY TRAFFIC BY TYPE OF CARGO  
Montreal-Lake Ontario Section and Welland Canal (1)

Direction and Type of Cargo	No. of Transits	Net Tons	Gross Tons	Cargo Tons	Passengers
<u>Upbound:</u>					
Bulk	1,679	4,888,111	7,215,328	9,526,986	6
General	542	1,136,979	1,913,958	905,918	334
Mixed	409	782,923	1,287,225	625,941	283
Passengers	130	28,779	48,058	-	3,478
In Ballast - Ocean	271	1,186,602	1,985,234	-	-
- Laker	1,807	5,816,024	8,219,780	-	-
- Other	314	787,964	117,354	-	-
Total - Upbound	5,152	13,927,382	20,786,937	11,058,845	4,101
<u>Downbound:</u>					
Bulk	3,150	10,539,191	15,312,455	20,523,408	77
General	133	345,009	586,784	410,126	22
Mixed	502	936,947	1,671,728	1,715,031	482
Passengers	130	29,725	50,024	-	4,167
In Ballast - Ocean	73	452,389	758,500	-	-
- Laker	852	2,008,505	2,893,658	-	-
- Other	284	73,625	100,352	-	-
Total - Downbound	5,124	14,385,391	21,373,501	22,648,565	4,748
GRAND TOTAL	10,276	28,312,773	42,160,438	33,707,410	8,849

(1) Represents total Seaway traffic eliminating duplications between the two Canals.



## New Trend on Waterways

The trend is toward specialization on the inland waterways. The latest example of this is the towboat Eugenie P. Jones, which is designed to push four heated tank barges containing molten sulphur. The new towboat was built by Dravo Corp., Pittsburgh, for the Canal Barge Co., of New Orleans.

**EVERY HOUR... BAKER INDUSTRIAL TRUCKS  
MOVE 240,000 TONS**



The tonnage Baker trucks move every hour equals the weight of the daily food intake of 60,000 people.

Produce, lumber, metals—Baker equipment moves an enormous tonnage of materials of every kind, and has for more than a century.

In fact, Baker equipment bought 50 years ago is still operating. This is positive proof of the durability built into every Baker truck.

Baker also manufactures a full line of gas and LP gas trucks for every application.

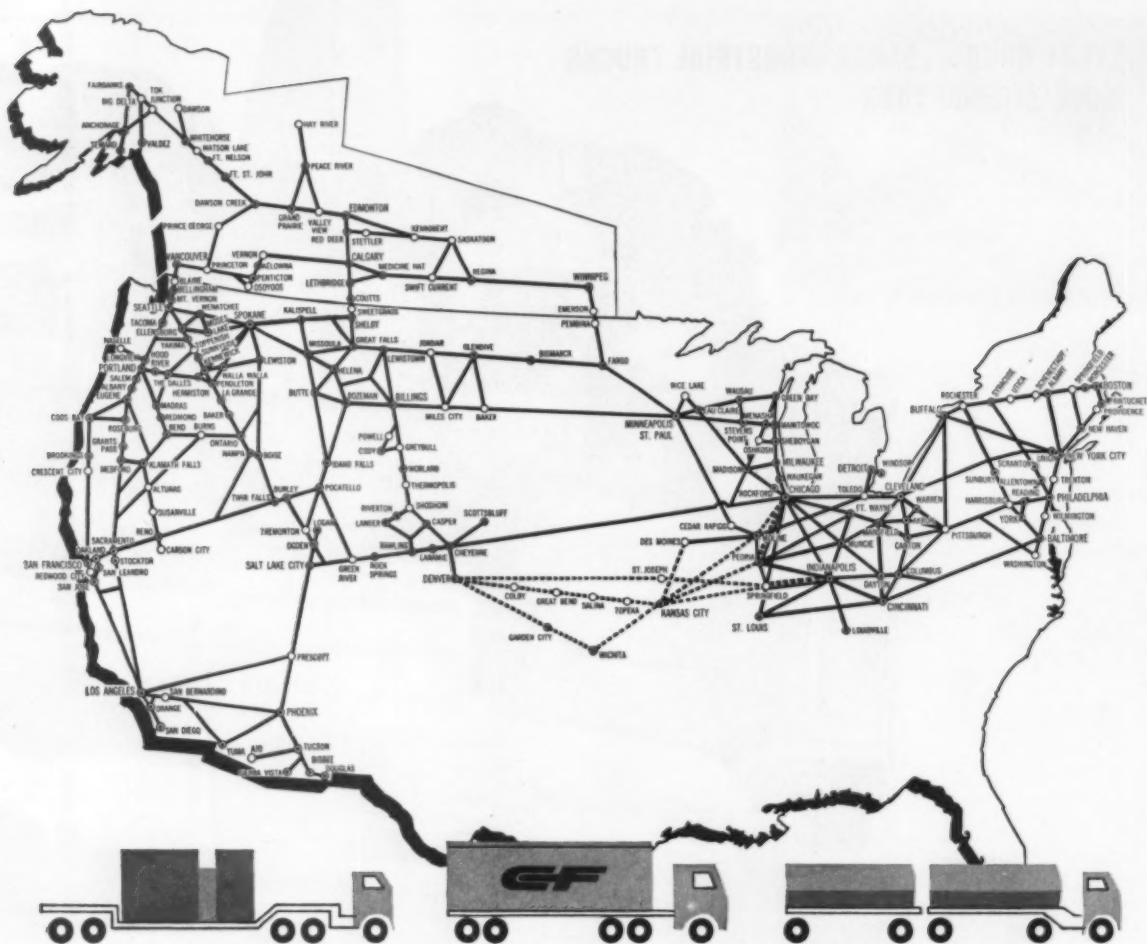
Write for free illustrated manual on fork truck safety-operating hints. Get one for each of your drivers. Baker Industrial Trucks, 8016 Baker Ave., Cleveland 2, Ohio.

What's more—features such as parts interchangeability, simplified mountings, and topside accessibility to components mean that Baker trucks *cost less to maintain*.

Ask your Baker dealer for the full story on how Baker equipment can cut *your* materials handling costs—whether you buy or lease. Or, write for details.

A DIVISION OF OTIS ELEVATOR COMPANY

**Baker BAKER**  
BAKER INDUSTRIAL TRUCKS • CLEVELAND 2, OHIO



## UNCOMMON CARRIER

Limitations of geography and facilities prevent any common carrier from serving *every* shipper in *every* state. But, there is one motor carrier today which can meet the needs of *more* shippers of *more* products in *more* cities than any other — Consolidated Freightways. And this, we think, makes CF an *uncommon* carrier.

Take CF's routes, for instance. The map above shows where we go. Our regular routes and main line terminals serve 76 of the 100 largest industrial markets in the United States and Canada. We have hundreds of daily schedules, with highly competitive transit times—ranging from hours to days.

Or take CF's diversified equipment. We can handle almost any product or commodity—truckload, LTL, bulk, reefer. You name it.

Then add CF's extra services. One example: Our unique Information Center is equipped to provide customers with comparative rates and other traffic data not available locally. Experts who speak the right language are assigned to specialties like export-import, perishables, and the like. We invite your inquiries.

All this means a system designed to provide more of the right kind of transportation every shipper and consignee needs—dependable, complete, uncomplicated, economical. Have you discovered the advantages of using the uncommon common carrier? Call your nearest CF terminal or contact the *CF Information Center, Box 32, Chicago 50. AUstin 7-7003. TWX Bellwood 172.*

ASK FOR NEW CF SYSTEM MAP AND POINTS LIST



**CONSOLIDATED FREIGHTWAYS**  
*Leading Name in Truck Transportation*





**W**HAT IS your concept of materials handling? Do you think of conveyors, hoists, hand trucks, powered trucks, or other types of equipment? Or do you think of men lifting, tugging, pushing, and pulling materials through various operations?

The use or lack of handling equipment depends on whether or not someone has taken time to develop a good way of tying together the operations.

There are five limiting factors that have hindered the materials handling progress:

1. **Misconception of what materials handling is.** Many believe that if they have a fork truck or conveyor, they are in the handling business. That's not enough. Materials handling is complete planning from the time a material comes from the vendor until it goes through all operations in the plant and is eventually in the consumer's hands. Equipment is only an aid.

2. **The attitude of management and personnel.** The problem is not in producing ideas. The main difficulty seems to be overcoming resistance to change.

3. **Piecemeal materials handling installations.** Solving materials handling problems on an emergency basis is the general rule. The most intolerable situation of the moment gets the attention. Materials handling will pay off only when it has been given a position in overall planning.

4. **Limitations of present equipment manufacturers.** A wide variety of standard materials handling equipment with many attachments is available. Special equipment is available upon demand. No one piece of major handling equipment will solve all elements of a problem. Therefore, we have to go to many sources to procure equipment to form an integrated system. This takes hours of research. There is a general lack of coordination among manufacturers of specific equipment. This makes it difficult to get the engineering data required for a

complete system. The greatest need in the equipment field is systems engineering.

5. **Educated and experienced materials handling men.** We have too many people who are willing to give lip service to materials handling. Too few are willing to study it.

Mechanically and materially, we are able to centralize and take the necessary steps to solve many problems in plant layout and materials handling. However, one of the biggest problems is overcoming resistance to change. This resistance is heard in such phrases as "It's too much trouble to change," "Our plant is too small," "We are an over-grown job shop," "We've always done it this way," "It won't pay for itself," "I know some plant that tried it."

How many of these negative ideas sound familiar? The management of any organization is subjecting itself to an ever-increasing amount of penalties when it condones this type of thinking.

As long as you are working with management, a large portion of your time will be devoted to changing the attitudes of others. How can you do this? Here is a suggestion.

## A hintful guide to handling costs

A few illustrations from this article may quickly change your conception of materials handling, the science that only works when it works for you

Prepare a memorandum answering these four questions:

1. What is the problem?
2. What is the cause of the problem?
3. What are all of the possible solutions to the problem?
4. What solution do you suggest?

To help answer these questions, perhaps it is well to go back to the three steps which many executives have used in the past:

1. Get the facts.
2. Analyze the facts.
3. Arrive at a decision—then act on that decision.

Obvious? Yes. Aristotle taught it—and used it.

In analyzing the facts, we must take into consideration the whole field of materials handling. Materials handling is a system of methods and equipment which ties together productive and non-productive operations. It makes them into a unit. There is a close relationship between materials handling and plant layout. James M. Apple, author of a book on "Plant Layout and Materials Handling," has stated this briefly:

1. **The material flow is the basis for the layout design.**

(Please Turn Page)

# Handling Costs . . .

(Continued from Preceding Page)

2. The layout design is the basis for the plant building design.

3. The effectiveness of the plan for the arrangement of the physical facilities is the basis for successful operation of the enterprise.

Therefore, it can be concluded that the material flow and handling problem is the base upon which the success of the enterprise rests.

In studying handling and layout problems, I have found that all problems contain these elements to some degree:

1. **Materials.** All plant operational problems start with materials. Get all the information available such as properties, shape, characteristics, weight, dimensions. The source of the data can be blueprints, parts lists, and process specifications. Find the quantity of materials from the sales forecast, production scheduling, and inventory control. Some

type of spread sheet generally is used to record this data.

2. **Containers.** Materials generally have to be moved in some type of containers such as bags, boxes, barrels, tank cars, or tote pans. We need a description—size, shape, cubic content, and weight capacity.

3. **Movements.** This is the flow of the material from raw storage through the various processes and to the shipping dock. Routing, distance, sequence of operations, through what machinery.

4. **Frequency and speed.** How often and how fast are the materials moved? What are the production cycle time, set up time, daily stock requirements, machine load data, capacity available, number of shifts, machine efficiency, economical lot size, peak load requirements?

5. **Float and storage requirements.** How much raw materials to be stored, purchase-lot quantities for pricing, quantities be-

tween process operations, inventory control procedure, stock for stores, finished product, or direct shipment.

6. **Building facilities.** Type of building, columns, spacing, floor load capacity, ceiling height, service lines, elevators, ramps, and roadways.

7. **Labor.** Who moves material? When? Does productive labor handle materials outside of machine cycle time? How much time is involved in the movement?

8. **Equipment.** Is productive equipment adequate to turn out the volumes required? Is equipment properly located? Inventory all types of materials handling equipment.

9. **Cost.** Break down handling costs by departments. Show power cost, depreciation, purchase price of new machinery, installation cost, and salaries and wages.

10. **Savings.** Unamortized value of displaced equipment, fixed overhead charges against displaced equipment, increased productivity, labor costs, more tons per man hour, damaged and spoiled work.

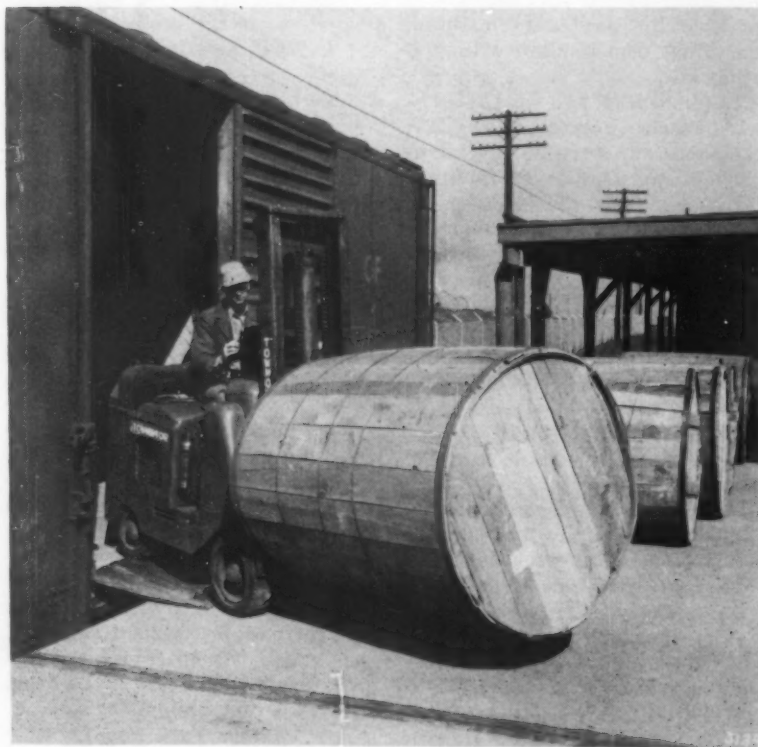
This list is by no means complete. Additional factors can be added as required. Thorough data analysis as it reflects the objective for which expenditures are to be made is indispensable to good management. Only through a combination of the right kind of significant costs can a decision concerning better handling methods and layout be reached.

This type of analysis automatically determines whether or not existing facilities will effectively accommodate the required work load. At the same time, reductions, additions, or modifications that may be required to present buildings or equipment can be determined. With this kind of data properly recorded, a review can be made at any time.

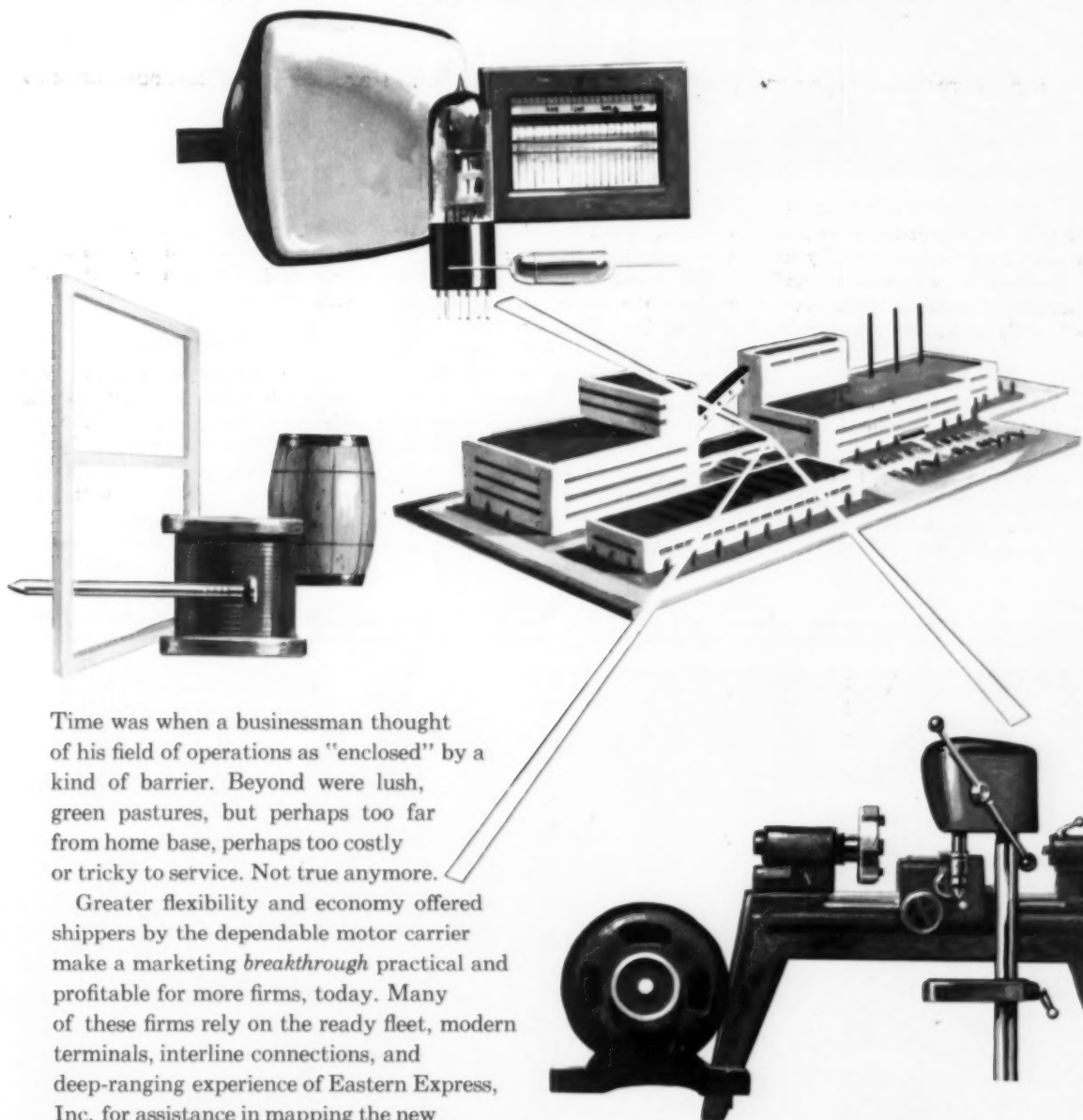
In addition to the above elements of a problem, there are eight other factors to be considered:

1. **Continually adopt a questioning attitude.** Take nothing for granted. Look at a problem from all angles.

2. **Look at the entire movement from the source of raw materials to the ultimate consumer.** Few  
(Please turn to page 78)



Stretch toward greener pastures... as those  
once too-tough or too-distant markets are reached and  
breached with Eastern, the modern motor carrier



Time was when a businessman thought of his field of operations as "enclosed" by a kind of barrier. Beyond were lush, green pastures, but perhaps too far from home base, perhaps too costly or tricky to service. Not true anymore.

Greater flexibility and economy offered shippers by the dependable motor carrier make a marketing *breakthrough* practical and profitable for more firms, today. Many of these firms rely on the ready fleet, modern terminals, interline connections, and deep-ranging experience of Eastern Express, Inc. for assistance in mapping the new broad base of the future. And benefits begin at your first planning session with Eastern, where *go-how* specialists chart smoother going—and growing.

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# Aisles push profits up at

The old warehouse squeeze play boosts profits at this warehouse as narrow trucks

**S**PACE IN Wisconsin is as precious as anywhere else if your business is warehousing and the additional services which make it efficiently inexpensive and safe.

## New Equipment

In a move to get the greatest benefits from existing space, Hansen Storage Co., Milwaukee, Wis., incorporated a new piece of handling equipment into its operations. It is a fork-lift truck, but one with an 180-deg rotating front

end that stacks or picks loads from a 90-deg angle left or right.

The midwest warehouse added four of the trucks to its fleet of 60 fork lifts. They are used in the new warehouse and after six months, the trucks have brought many dividends. One half of the 65,000 sq ft warehouse receives and holds grocery and allied items. Here, some 30,000 tons of merchandise are handled annually. (The other half holds newsprint and general merchandise.) With

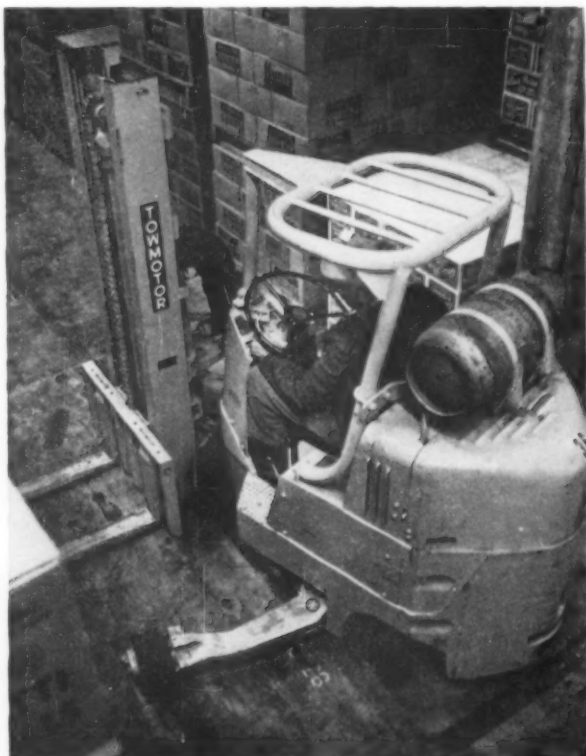
the new handling equipment, aisle widths have shrunk by one-third. From 12-ft wide to a profitable 8 ft wide.

## More Space

Square footage picked up—over 3000 sq ft is gained—and now the warehouse handles 800 additional pallets. The diagram gives graphic comparison to the old and new storage facilities with the same warehouse area. Shaded areas indicate storage racks.

Close-up view shows compactness of truck and ability to pick loads from narrow operating quarters. Handles 4000 lb.

One of new Towmotor narrow aisle trucks stacks load of foodstuffs 18 ft high. It works in 8 ft aisle with outrigger





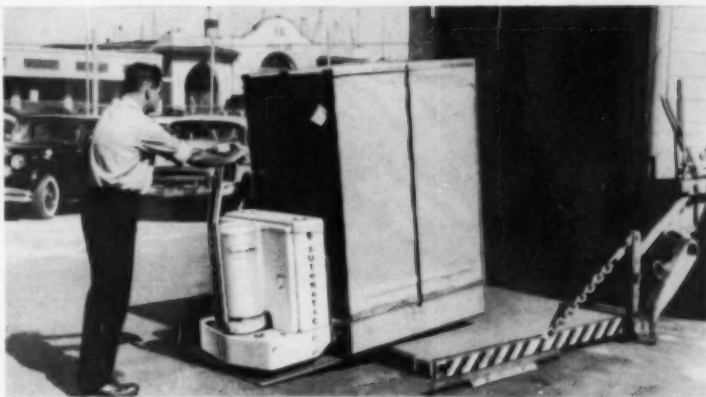
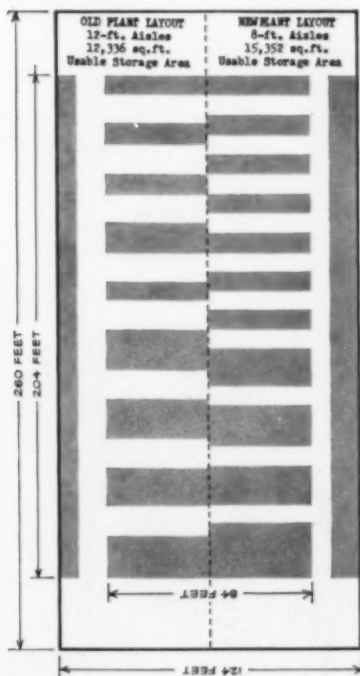
# warehouse

## increase storage space

Where once 12,336 sq ft of space existed, now there is 15,352 sq ft.

With the new plant layout, pallets are racked back to back in seven of the storage sections. Since the lift truck can pick or stack loads three pallets deep on recessed tiers, open stock is stored two deep in three sections and two and three deep in another.

All loads are palletized and stacked up to 20-ft high—just 2 ft short of the 22-ft ceiling. Some loads are racked for flexibility in merchandise selection. A highlight of handling efficiency has allowed Hansen to standardize on a pallet design while damage to merchandise during stacking and picking has dropped considerably. ●



The unique tailgate affords easy unloading of products at ground level. Automatic Transporters' brakes automatically applied when handle is up

## Walkie goes piggy-back for quick deliveries

A COMBINATION of engineering ideas has paid off in better customer relations for a principal Pacific Coast paper company.

Plagued by customers' complaints of time consuming delivery operations of skids of paper, weighing from 2000 to 4000 lb, which were made on low-bed trucks requiring a combination of ramps and muscle-power to unload, Zellerbach Paper Co. set out to correct them.

It came up with two things: a modified delivery truck and a fork truck with a hinged platform or skid adapter.

With these pieces of equipment the firm was able to increase its capacity to efficiently and safely handle tonnage merchandise on a one-stop, one-man delivery system.

First, a high-bed cab-over truck's load capacity was increased to approximately 24,000 lb by adding a trailing axle. Then a specially designed hydraulic lift gate measuring 6 ft x 8 ft was installed on the truck. To reduce its overall length, the gate was constructed to fold up against the back

of the van. There it serves another purpose—a tail gate.

The heavy-duty cab-over does a good job delivering through the crowded, steep, hilly thoroughfares of San Francisco. Very few of Zellerbach's customers, especially small printers and jobbers, have dock facilities, so the hydraulic ramp facilitates unloading at street or curb level.

Piggy-backing, so to speak, a low-lift pallet truck is also paying off as a time-saving move. The feature that has added to its versatility is the platform structure which comes down over the pallet forks. This skid adapter is hinged to the back plate of the pallet forks. When not in use it folds back against the battery housing. Standing upright, it serves as a backstop for pallet loads which are highly tiered.

The electric powered low-lift is used in the loading of the truck in a first-last sequence.

The over-the-road truck and the walkie are now executing a time and money saving function. The two trucks have paired to make a one-stop delivery system. ●

## "On the waterfront...

it's 8:22 p.m. . . . the ship is loaded  
. . . sailing time is dawn tomorrow. We loaded 2,200 tons of cargo  
in her hold today, starting at sun-up. Tomorrow there'll be another  
ship . . . another day of lifting, hauling, storing.

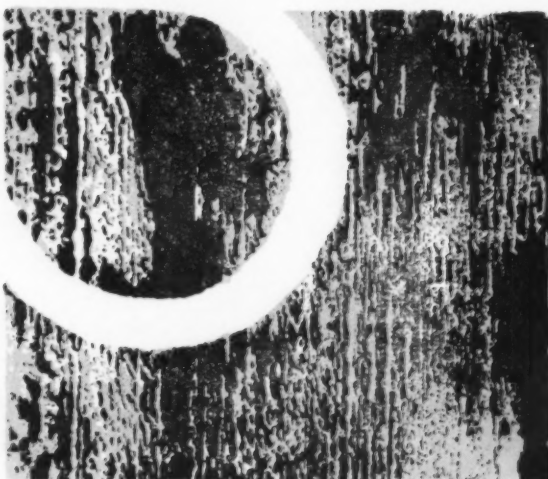
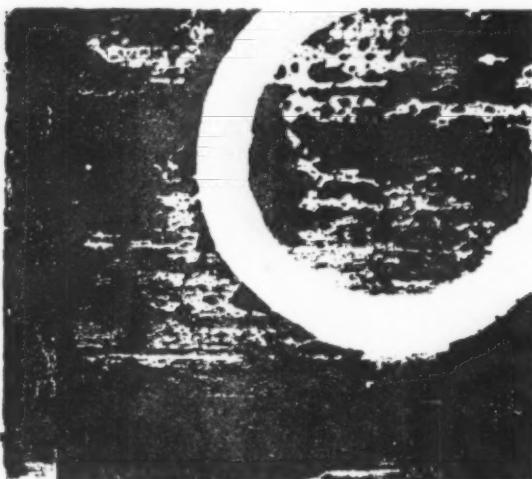
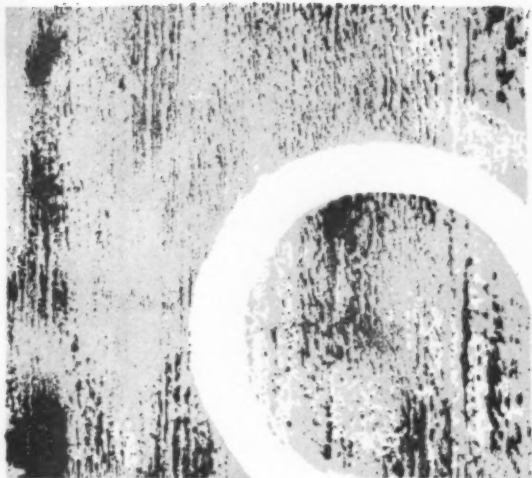
"When you work like that from day  
to day, you need a truck that can stand the gaff . . . you need a truck  
that can handle the load with ease and put it where you want it—fast.  
You need a Clark to work with."



Industrial Truck Division  
CLARK EQUIPMENT COMPANY  
Battle Creek, Michigan



*For full details,  
see your local Clark Dealer  
or circle 77 on reader service card*



**Flexibility**—that's the key characteristic  
of motor transport. Trucks can go wherever  
there are roads—in any and all directions.



## AMERICAN TRUCKING INDUSTRY

American Trucking Associations, Inc., Washington 6, D. C.

THE WHEELS THAT GO EVERYWHERE





# INDUSTRIAL TRUCK SPECIFICATIONS—1961-62

Specifications of some 1000 models and types of industrial trucks are included in this 16-page section. Because of space limitations, basic models only are listed for each firm. A multitude of variations, to fit the needs of the individual user, are available.

The entire section, from Pages 45 to 60, has been

reprinted. Copies can be obtained at 70¢ each by writing The Editor of DISTRIBUTION AGE, Chestnut & 56th Sts., Philadelphia 39, Pa. Quantity lot prices will be quoted on request.

Where tire and wheel dimensions are listed, the following guide should be followed:

Solid Molded On:

Tire Outside Diameter x Rim Width  
Solid Molded On:  
Tire Outside Diameter x Base Width x Wheel O.D.  
Pneumatic Wide Base:  
Tire Outside Diameter x Cross Section Width x Rim O.D.  
Pneumatic Narrow Base:  
Cross Section Width x Rim Outside Diameter  
Pneumatic Single Tube:  
Tire Outside Diameter x Cross Section Width  
Pneumatic Single Tube (Wheel):  
Tire Outside Diameter x Cross Section Width

## POWERED NON-LIFT PLATFORM TRUCKS

MAKE AND MODEL	Rated Capacity (Lb.)	Service Weight (Lb.)	Operator—Sits, Stands, Walks	Motive Power Type	OVERALL TRUCK DIMENSIONS (in.)			PLATFORM DIMENSIONS (in.)			TIRES		TURNING RADIUS (in.)			BATTERY		SPEEDS				GRAD-ABILITY (Per Cent)							
					Width	Length	Height	Wheelbase	Length	Width	Height from Ground	Number of Steering Wheels	DRIVE WHEELS		STEERING WHEELS		Inside	Outside	Intersecting Axle Width	Normal Voltage	Ampere Hours		Number of Forward	Number of Reverse	TRUCK (Mph)				
													Type	Size	Type	Size									Unloaded		Loaded		
																									Forward	Reverse	Forward	Reverse	
Automatic	FP-20	2000	1935	S	EM	Str	40	109		80	60 1/2	40	14 1/2	Cu	14x4 1/2	24	90	66	24		3	3	5.5	5.5	5.0	5.0			
HN-2	HN-2	4000	3730	Str	EM	Str	39	114 1/2	65	64	38	41	22 1/2	Se	10x6	102	102	64	30		4	4	6.0	6.0	5.1	5.1			
HN-3	HN-3	8000	4700	Str	EM	Str	41	118 1/2	65	64	41	42	22 1/2	Se	10x6	48	103	69	30		4	4	6.0	6.0	4.7	4.7			
EN-2	EN-2	4000	4000	Str	EM	Str	46	105 1/2	55	64	46	46	20 1/2	Se	22x4 1/2	41	100	68	30		4	4	6.5	6.5	5.1	5.1			
EN-3	EN-3	8000	4255	Str	EM	Str	48	107 1/2	53	64	48	48	20 1/2	Se	20x3	41	100	68	30		4	4	6.5	6.5	4.7	4.7			
Baker	PGF-040	4000	3100	S	GE	Str	60	160	60	100	60	26	2	P	6.00/9	190	255	133			4	1	25.0	3.8	25.0	3.8			
Elwell-Parker	FM-4	8000	2900	Str	E-G	Str	42 1/2	124 1/2	58	60	64	41	12 1/2	Se	10x6	45	105	70			4	4	5.5	5.5	4.0	4.0			
WH-8	WH-8	8000	2975	Str	E-G	Str	42 1/2	146 1/2	58	78	68	41	17 1/2	Se	22x6	61	123	78			4	4	6.0	6.0	4.5	4.5			
IZ	IZ	8000	2475	Str	E-G	Str	40	111 1/2	58 1/2	60	64	40	25	4	Se	20x3 1/2	45	101	69			4	4	6.0	6.0	4.0	4.0		
FB-2000	FB-2000	2000	1800	S	EM	Str	47	106	42	71	60	45	25	1	P	6.00/8								10.0	10.0	8.0	8.0		
FB-4000	FB-4000	4000	1800	S	EM	Str	47	106	42	71	60	45	25	2	Cu	16 1/2 x 5								7.0	7.0	5.0	5.0		
Kalamazoo	2500	2000	1150	S	GE	Str	42	96	48	59 1/2	54	42	18 1/2	1	P	5.00/16	64	81				3	1	15.0	3.0	15.0	3.0		
E-1000	E-1000	2000	1900	S	EM	Str	40	107 1/2	53	40	63	40	8 1/2	1	Se	15 1/2 x 5	75	86				V	V	8.0	8.0	6.5	6.5		
K-45	K-45	4000	2700	S	GE	Str	60	157	52	66	108	60	27	2	P	6.50/10	122	180	120			3	1	35.0	10.0	30.0	10.0		
Mercury	A-423	2000	1260	S	EM	Str	40	111 1/2	61 1/2	63	40	22	2	1	PC	4.00/12 1/2		82						6.0	6.0	6.5	6.5		
A-1008	A-1008	3000	2500	Str	EM	Str	43	112 1/2	58 1/2	61	68	46	27 1/2	2	Se	22x4 1/2	29	85						6.0	6.0	4.5	4.5		
A-1014	A-1014	4000	2700	Str	EM	Str	48	112 1/2	58 1/2	61	68	46	27 1/2	2	Se	20x4	97	97						6.0	6.0	4.5	4.5		
A-1016	A-1016	4000	2800	Str	EM	Str	48	112 1/2	58 1/2	61	68	46	27 1/2	2	Se	20x5	97	69						6.0	6.0	4.5	4.5		
A-1018	A-1018	4000	2800	Str	EM	Dr	41	120 1/2	58 1/2	71	72	41	11 1/2	2	Se	10 1/2 x 5	108	69				4	4	6.0	6.0	4.5	4.5		
A-1018	A-1018	8000	2700	Str	EM	Dr	41	120 1/2	58 1/2	71	72	41	11 1/2	2	Se	10 1/2 x 6	108	69				4	4	6.0	6.0	4.5	4.5		
Prime-Mover	M-188	1500	810	W	GE				34 1/2	(6)	(16)	21 1/2			12						1	1					4.0	2.8	
M-30A	M-30A	3000	1400	S	GE				69 1/2	(9)	42	27 1/2			16						1	1					12.0	12.0	
F-10	F-10	1000	850	S	GE				50	10	16 1/2	16 1/2			16						1	1					8.3	5.0	
F-40A	F-40A	4000	1880	S	GE				90	122	42	22 1/2			16						1	1					14.0	11.2	
Yale & Towne	FM-20	2000	1225	S	E-G	Str	40	96	62	66	42	22	2	1	PC	18x5 1/2	83	66				4	4	9.0	9.0	8.0	8.0	7 1/2	7 1/2

### ABBREVIATIONS

- 1—Without battery.
- 2—4014, 3014, 3015.
- 3—Cushion, 2115.
- 4—Cushion, 1745.

- 5—25 to 30.
- 6—225 to 250.
- 7—300 to 450.
- 8—445, or 45.

- 9—42 or 60.
- 10—30% or 42.
- 11—Cushion.

- Dr—Drop.
- E—Electric or gas-electric.
- EM—Electric motor.

- GE—Gasoline engine.
- P—Pneumatic.
- PC—Pneumatic or cushion.

- S—Slee.
- So—Solid.
- St—Stand.

- Str—Straight.
- V—Various.
- W—Walks.

# POWERED LOW-LIFT FORK OR PLATFORM TRUCKS

MAKE AND MODEL	Capacity (Lb.) Maximum Load	Service Weight (Lb.) Excluding Battery	Operator—Walks or Rides	POWER TYPE	OVERALL CHASSIS DIMENSIONS (in.)			PLATFORM DIMENSIONS (in.)				FORK DIMENSIONS (in.)				BATTERY		SPEEDS With Capacity Load		GRAD-ABILITY (Per Cent)	WHEELS										
					Lifting	Width	Height—To Top of Controls	Underclearance	Minimum	Maximum	Width	Height Above Ground	Minimum	Maximum	Length	Lateral Outside Width	Height Above Ground	Normal Voltage	Ampere Hours		Truck (Mph.)	Time of Lift (Sec.)	Unloaded	Capacity Load	Number	Diameter (in.)	Drive	Set Tandem	Number in Each Fork or Trail	Diameter (in.)	
Automatic	LO-2	4000	R	EM	Hyd	113	39	50	21 1/2	59 3/4	28 3/4	10 1/4	18 1/4	30	60	27 3/4	7 1/4	30	480	5.4	3.4	22 1/2	2	9 1/2	N	2	9 1/2	8 1/2			
	LO-3	3425	R	EM	Hyd	113	41 1/2	50	21 1/2	59 3/4	28 3/4	10 1/4	18 1/4	30	60	27 3/4	7 1/4	30	36	38	4.0	3.8	22 1/2	2	10 1/2	N	2	10 1/2	10 1/2		
	LO-5	10000	R	EM	Hyd	126 1/2	29 1/2	32	50	21 1/2	38	72	28 1/2	2 1/2	30	60	27 3/4	3 1/4	30	12	4.2	1.8	10 1/4	2	10 1/4	N	2	10 1/4	10 1/2		
	ETWE-4	4000	R	EM	Hyd	29 1/2	32	50	21 1/2	38	72	28 1/2	2 1/2	30	60	27 3/4	3 1/4	30	12	4.2	1.8	10 1/4	2	10 1/4	N	2	10 1/4	3 1/2			
	EPE-4	4000	R	EM	Hyd	29 1/2	32	50	21 1/2	38	72	28 1/2	2 1/2	30	60	27 3/4	3 1/4	30	12	4.2	1.8	10 1/4	2	10 1/4	N	2	10 1/4	3 1/2			
	EPE-6	4000	R	EM	Hyd	29 1/2	32	50	21 1/2	38	72	28 1/2	2 1/2	30	60	27 3/4	3 1/4	30	12	4.2	1.8	10 1/4	2	10 1/4	N	2	10 1/4	3 1/2			
	ETWE-4	6000	R	EM	Hyd	29 1/2	32	50	21 1/2	38	72	28 1/2	2 1/2	30	60	27 3/4	3 1/4	30	12	4.2	1.8	10 1/4	2	10 1/4	N	2	10 1/4	3 1/2			
	ETWE-6	6000	R	EM	Hyd	29 1/2	32	50	21 1/2	38	72	28 1/2	2 1/2	30	60	27 3/4	3 1/4	30	12	4.2	1.8	10 1/4	2	10 1/4	N	2	10 1/4	3 1/2			
	WPY-4	4000	R	EM	Hyd	29 1/2	30 1/2	49	31 1/2	30	64	20	26 1/2	6	9 1/2	30	60	22	27	31 1/2	12	2.1	3.0	10 1/2	2	10 1/2	N	2	10 1/2	8 1/2	
	WPY-4	4000	R	EM	Hyd	29 1/2	30 1/2	49	31 1/2	30	64	20	26 1/2	6	9 1/2	30	60	22	27	31 1/2	12	2.1	3.0	10 1/2	2	10 1/2	N	2	10 1/2	8 1/2	
Baker	WVY-4	4000	W	EM	Hyd	30 1/2	29	49	1 1/2	36	84	20	26 1/2	6	9 1/2	30	60	22	27	31 1/2	12	2.1	3.0	10 1/2	2	10 1/2	N	2	10 1/2	8 1/2	
	WP-4	4000	W	EM	Hyd	21 1/2	29	49	3 1/2	36	84	20	26 1/2	6	9 1/2	30	60	22	27	31 1/2	12	2.1	3.0	10 1/2	2	10 1/2	N	2	10 1/2	8 1/2	
	WW-6	4000	W	EM	Hyd	22 1/2	29	49	3 1/2	36	84	20	26 1/2	6	9 1/2	30	60	22	27	31 1/2	12	2.1	3.0	10 1/2	2	10 1/2	N	2	10 1/2	8 1/2	
	WW-6	4000	W	EM	Hyd	22 1/2	29	49	3 1/2	36	84	20	26 1/2	6	9 1/2	30	60	22	27	31 1/2	12	2.1	3.0	10 1/2	2	10 1/2	N	2	10 1/2	8 1/2	
	WW-6	4000	W	EM	Hyd	22 1/2	29	49	3 1/2	36	84	20	26 1/2	6	9 1/2	30	60	22	27	31 1/2	12	2.1	3.0	10 1/2	2	10 1/2	N	2	10 1/2	8 1/2	
	WWY-6	4000	W	EM	Hyd	30 1/2	30 1/2	49	3 1/2	36	84	20	26 1/2	6	9 1/2	30	60	22	27	31 1/2	12	2.1	3.0	10 1/2	2	10 1/2	N	2	10 1/2	8 1/2	
	WWY-6	4000	W	EM	Hyd	30 1/2	30 1/2	49	3 1/2	36	84	20	26 1/2	6	9 1/2	30	60	22	27	31 1/2	12	2.1	3.0	10 1/2	2	10 1/2	N	2	10 1/2	8 1/2	
	WWY-6	4000	W	EM	Hyd	30 1/2	30 1/2	49	3 1/2	36	84	20	26 1/2	6	9 1/2	30	60	22	27	31 1/2	12	2.1	3.0	10 1/2	2	10 1/2	N	2	10 1/2	8 1/2	
	EPD-060	6000	R	EM	Hyd	128	42 1/2	56 1/2	3 1/2	55	84	26 1/2	48	10 1/2	16 1/2	36	450	4.2	3.5	4.0	10	8	2	22 1/2	2	22 1/2	N	2	22 1/2	10 1/2	
	EPD-100	10000	R	EM	Hyd	134	42 1/2	56 1/2	3 1/2	55	84	26 1/2	48	10 1/2	16 1/2	36	500	4.2	3.5	4.0	10	8	2	22 1/2	2	22 1/2	N	2	22 1/2	10 1/2	
Barrett-Crevens	PG	4000	W	EM	HE	30	28	53 1/2	2 1/2	30	72	20	25	4	7	30	72	18	36	31 1/2	12	2.5	6.0	12	1	10	N	2	10	10 1/2	
	PGK	1200	W	EM	HE	30	28	53 1/2	2 1/2	30	72	20	25	4	7	30	72	18	36	31 1/2	12	2.5	6.0	12	1	10	N	2	10	10 1/2	
	PGK	4000	1200	W	EM	HE	30	28	53 1/2	2 1/2	30	72	20	25	4	7	30	72	18	36	31 1/2	12	2.5	6.0	12	1	10	N	2	10	10 1/2
	PGK	6000	1200	W	EM	HE	30	28	53 1/2	2 1/2	30	72	20	25	4	7	30	72	18	36	31 1/2	12	2.5	6.0	12	1	10	N	2	10	10 1/2
	PGK	4000	850	W	EM	HE	24 1/2	29	53 1/2	2 1/2	30	72	18	36	31 1/2	12	2.5	6.8	17	7	1	1	10	N	2	10	N	2	10	3 1/2	
	PGK	6000	900	W	EM	HE	24 1/2	29	53 1/2	2 1/2	30	72	18	36	31 1/2	12	2.5	6.8	17	7	1	1	10	N	2	10	N	2	10	3 1/2	
	40LP	4000	850	W	E-G	Hyd	28 1/2	32	52	2 1/2	30	72	24	26	6	39	30	72	18	36	31 1/2	12	2.3	4.0	1	10 1/2	N	2	10 1/2	49	
	60P	4000	1100	W	E-G	Hyd	28 1/2	32	52	2 1/2	30	72	24	26	6	39	30	72	18	36	31 1/2	12	2.3	4.0	1	10 1/2	N	2	10 1/2	31 1/2	
	60P	4000	1120	W	E-G	Hyd	28 1/2	32	52	2 1/2	30	72	24	26	6	39	30	72	18	36	31 1/2	12	2.3	4.0	1	10 1/2	N	2	10 1/2	31 1/2	
	80LP	4000	1016	W	E-G	Hyd	26 1/2	32	52	2 1/2	36	96	26	30	6	39	30	84	22	36	31 1/2	12	1.9	4.0	1	10 1/2	N	2	10 1/2	42 1/2	
Elliott-Parke	100LP	10000	1026	W	E-G	Hyd	26 1/2	32	52	2 1/2	36	96	26	30	6	39	30	84	22	36	31 1/2	12	1.9	4.0	1	10 1/2	N	2	10 1/2	44	
	EQ-4	4000	2100	R	EM	95 1/2	31 1/2	54 1/2	3	41	86	24	28 1/2	10 1/2	15	11	60	24	28 1/2	10 1/2	2	4.0	2.5	2	15 1/2	N	2	15 1/2	8 1/2		
	EP-11	4000	3150	R	EM	119 1/2	33 1/2	56 1/2	2 1/2	54	120	26 1/2	36	10 1/2	16 1/2	13	60	26 1/2	36	10 1/2	2	4.0	2.5	2	15 1/2	N	2	15 1/2	8 1/2		
	EP-11	4000	3150	R	EM	119 1/2	33 1/2	56 1/2	2 1/2	54	120	26 1/2	36	10 1/2	16 1/2	13	60	26 1/2	36	10 1/2	2	4.0	2.5	2	15 1/2	N	2	15 1/2	8 1/2		
	EP-4	6000	3200	R	EM	119 1/2	42 1/2	58	4	54	120	26 1/2	36	10 1/2	16 1/2	13	60	26 1/2	36	10 1/2	2	4.0	2.5	2	15 1/2	N	2	15 1/2	8 1/2		
	GE-4	6000	3900	R	EM	125 1/2	42 1/2	58	4	54	120	26 1/2	36	10 1/2	16 1/2	13	60	26 1/2	36	10 1/2	2	4.0	2.5	2	15 1/2	N	2	15 1/2	8 1/2		
	EW-4	6000	3450	R	EM	120 1/2	42 1/2	58	10 1/2	54	108	26 1/2	36	10 1/2	16 1/2	13	60	26 1/2	36	10 1/2	2	4.0	2.5	2	15 1/2	N	2	15 1/2	8 1/2		
	EP-10	10000	3600	R	EM	129 1/2	43 1/2	59 1/2	3 1/2	60	120	26 1/2	40	11 1/2	18 1/2	13	60	26 1/2	40	11 1/2	2	4.5	6.0	2	22 1/2	N	2	22 1/2	10 1/2		
	GE-10	10000	4200	R	EM	132 1/2	42 1/2	58	3 1/2	60	120	26 1/2	40	11 1/2	18 1/2	13	60	26 1/2	40	11 1/2	2	4.5	6.0	2	22 1/2	N	2	22 1/2	10 1/2		
	L11-20	10000	1100	W	EM	132 1/2	42 1/2	58	3 1/2	60	120	26 1/2	40	11 1/2	18 1/2	13	60	26 1/2	40	11 1/2	2	4.5	6.0	2	22 1/2	N	2	22 1/2	10 1/2		
Erickson	L11-20	10000	9760	R	EM	132 1/2	42 1/2	58	3 1/2	60	120	26 1/2	40	11 1/2	18 1/2	13	60	26 1/2	40	11 1/2	2	4.5	6.0	2	22 1/2	N	2	22 1/2	10 1/2		
	EV-20	20000	...	R	EM	146 1/2	45 1/2	58	6	75	41	36	36	17 1/2	23 1/2	18	60	36	36	17 1/2	2	3.5	7.0	2	22 1/2	N	2	22 1/2	15 1/2		
	EV-20	20000	...	R	EM	146 1/2	45 1/2	58	6	75	41	36	36	17 1/2	23 1/2	18	60	36	36	17 1/2	2	3.5	7.0	2	22 1/2	N	2	22 1/2	15 1/2		
	L-14	30000	...	R	EM	138 1/2																									

1-12 or 24	16-10, 11, 13, 14 or 14½	25-11, 12 or 13	35-130 to 14	EMG-Electric motor or gasoline engine.
2-including platform.	17-24 to 30.	26-64½, 12 or 13.	36-650/10 or 23A5.	EW-Electric motor.
3-Standard.	18-300 to 350.	27-64½	37-300 to 450.	R-Rider.
4-6, 7 or 11.	19-32 to 36.	28-104½ to 117.	38-947 or 101A7.	RW-Rides or walks.
5-9½, 10½, 12½ or 14½.	19-48 to 60.	29-300 to 450.	39-11, 13 or 15.	SD-Single or dual.
6-1½ or 11¼.	20-27 with lead acid battery and 28-29 with alkaline battery.	30-574 to 1064.	40-11, 13 or 15.	TD-Triples.
7-1½, 2, 3, 5 or 15.	21-230 to 250.	31-574 to 584.	41-9, 10, 12 or 14.	W-Walks.
8-300 to 450.	22-254 to 271.	32-584 to 594.	42-64½, 74½, 94½ or 104.	W-Yes.
9-100 to 1250 depending on length.	23-254 to 271.	33-254 to 271.	D-Dual.	
10-1 or 2.	24-700 to 1250 depending on length.	34-254 to 271.		
11-9, 7 or 9½.	25-7 or 9½.			



# INDUSTRIAL TRUCKS—TOWING TRACTOR TYPE

MAKE AND MODEL	Drawbar Pull (Lb.)	Trailing Load—Dry Level Concrete (Tons)	Weight—Excluding Battery (Lb.)	Operator—Sits, Stands, Walks	BATTERY		DIMENSIONS (In.)					TURNING RADIUS (In.)		SPEEDS					GRAD. CAPABILITY (Per Cent)	COUPLER		TYPES		SIZES																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
					Normal Voltage	Ampere Hours	Wheelbase	Length—Overall	Width—Overall	Height—To Steering Wheel	Under-clearance		Outside	Inside	Intersecting Aisle	Number of Forward	Unloaded (Mph)			Loaded (Mph)	Unloaded	At Rated Load	Steering Wheels	Driving Wheels	Type	Steering Wheels	Driving Wheels	Type	Steering Wheels	Driving Wheels																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
											At Truck Center	Lowest Point					Forward	Reverse													Forward	Reverse																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
Automatic	FT	250	7	7851	S	EM	24	24	30	46½	29	51½	3½	48	48	37	4	4.8	4.8	2.4	2.4	10½x5	P	Cu	Cu	10½x5	17x4½																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
	FTE	250	7	8851	S	EM	24	24	25	52	29	51½	3½	37	37	48	4	6.2	6.2	2.4	2.4	10½x5	P	Cu	Cu	10½x5	16x4½																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
	BTW	600	17	39407	S	EM	36	36	42	53	42	51½	3½	69	69	2½	4	6.2	6.2	2.7	2.7	10½x5	P	Cu	Cu	10½x5	16x4½																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
	LTWE	600	17	39407	S	EM	36	36	42	53	42	51½	3½	69	69	2½	4	6.2	6.2	2.7	2.7	10½x5	P	Cu	Cu	10½x5	22x6																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
	WT-2A	200	400	1480	W	EM	12	12	31	37½	33	48	3	3	3	42	4	3.2	3.2	2.0	2.0	10x5	Opt	SC	SC	10x5	14x5½																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
	WT-4A	200	400	1480	W	EM	12	12	31	37½	33	48	3	3	3	42	4	3.2	3.2	2.0	2.0	10x5	Opt	SC	SC	10x5	6½x5																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
	WT4BS	400	400	1500	W	EM	12	12	31	37½	33	48	3	3	3	42	4	3.2	3.2	2.0	2.0	10x5	Opt	SC	SC	10x5	6½x5																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
	WT4BS	400	400	1500	W	EM	12	12	31	37½	33	48	3	3	3	42	4	3.2	3.2	2.0	2.0	10x5	Opt	SC	SC	10x5	6½x5																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
	UT2	200	200	1436	Se	EM	12	12	32	48	33	48	3	3	3	48	48	4	3.0	3.0	1.9	1.9	10x5	Opt	SC	SC	10x5	10x5																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
	UT4	400	400	1736	Se	EM	12	12	32	48	33	48	3	3	3	48	48	4	3.0	3.0	2.8	2.8	10x5	Opt	SC	SC	10x5	10x5																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
Barrett-Cravens	WT4	200	200	1715	Se	EM	24	24	37	49½	33½	41	2½	2½	48	48	4	6.7	6.7	5.0	5.0	10x5	Opt	SCP	SCP	10x5	10x5																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
	NW-4	4000	14	3400	W	EM	36	36	24	37½	29	53½	2½	6	6	41½	4	6.0	6.0	5.0	5.0	10x4	Opt	SCP	SCP	10x4	7x2½																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
	DG-12	200	5	1200	St	EM	12	12	32	46½	27	58	4½	2½	6	6	2	3.0	3.0	1.6	1.6	10x4	Opt	SCP	SCP	10x4	7x2½																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
	SG-24	200	5	1200	St	EM	12	12	32	46½	27	58	4½	2½	6	6	2	3.0	3.0	1.6	1.6	10x4	Opt	SCP	SCP	10x4	7x2½																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
	RG-24	200	5	1200	St	EM	12	12	32	46½	27	58	4½	2½	6	6	2	3.0	3.0	1.6	1.6	10x4	Opt	SCP	SCP	10x4	7x2½																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
	GFG-24	200	5	1200	St	EM	12	12	32	46½	27	58	4½	2½	6	6	2	3.0	3.0	1.6	1.6	10x4	Opt	SCP	SCP	10x4	7x2½																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
	TSG-12-24	800	5	960	St	EM	12	12	32	46	29	53½	2½	6	6	3	6.3	6.3	3.3	3.3	10x4	Opt	SCP	SCP	10x4	7x2½																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
	CKE-5	750	14	1850	St	GE	36	36	34	62½	29	54½	6½	2½	50	50	6	5.5	7.2	2.2	2.2	10x4	Opt	Cu	Cu	10x4	16½x4x1½																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
	CK-20	2000	40	3200	S	GE	36	36	40	68	39	54½	8½	3	62	62	5	1	10.0	2.3	2.0	2.0	10x4	Opt	Cu	Cu	10x4	13x3½x1½																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
	CT-21	2100	52	3400	S	GE	36	36	40	68	39	54½	8½	3	62	62	5	1	10.0	2.3	2.0	2.0	10x4	Opt	Cu	Cu	10x4	21x5x15																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
Clark	FCT-30	3000	3000	S	GE	36	36	57	57	55	58	9	5	108	108	5	13.9	13.9	1.4	1.4	8.00	Opt	Pn	Pn	8.00	8.00																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
	FCT-40	4000	4000	S	GE	36	36	57	57	55	58	9	5	108	108	5	13.9	13.9	1.4	1.4	8.00	Opt	Pn	Pn	8.00	7.717.5																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
	FCT-80	8000	8000	S	GE	36	36	57	57	55	58	9	5	108	108	5	13.9	13.9	1.4	1.4	8.00	Opt	Pn	Pn	8.00	7.717.5																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
	FCT-120	12000	12000	S	GE	36	36	57	57	55	58	9	5	108	108	5	13.9	13.9	1.4	1.4	8.00	Opt	Pn	Pn	8.00	7.717.5																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
	ECK-24	2400	15	3175	S	EM	36	36	69	122½	62	54	7	7	127	127	4	1	16.0	2.1	2.1	2.1	7.50	Opt	Pn	Pn	7.50	7.50																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
	ECK-30	3000	15	3175	S	EM	36	36	69	122½	62	54	7	7	127	127	4	1	16.0	2.1	2.1	2.1	7.50	Opt	Pn	Pn	7.50	7.50																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
	Tugger	200	200	1830	St	EM	12	12	34	46½	32	43	4½	2½	74	74	9	4	7.0	7.0	3.1	3.1	15½x5x10	Opt	Cu	Cu	15½x5x10	21x5x15																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
	ACT-225	22500	450	3000	S	GE	36	36	80	185½	84	68	6	7½	180	180	4	2	3.2	3.2	2.3	2.3	10x5x6x10	Opt	Cu	Cu	10x5x6x10	10x5x6x10																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										



# INDUSTRIAL TRUCKS—TOWING TRACTOR TYPE (CONTINUED)

MAKE AND MODEL	Drawbar Pull (Lb.)	Trailing Load — Dry Level Concrete (Tons)	Weight—Excluding Battery (Lb.)	Operator—Sits, Stands, Walks	Motive Power	BATTERY		DIMENSIONS (in.)				TURNING RADIUS (in.)			SPEEDS					GRAD- ABILITY (Per Cent)	Coupler		Type		TIRES			
						Normal Voltage	Ampere Hours	Wheelbase	Length—Overall	Width—Overall	Height— To Steering Wheel	Under- clearance		Outside	Inside	Intersecting Angle	Number of Forward	Number of Reverse	Unloaded (Mph)		Loaded (Mph)	Unloaded	At Rated Load	Steering Wheels	Driving Wheels	Steering Wheels	Driving Wheels	
												At Truck Center	Lowest Point						Forward	Reverse								
Mercury—Cont.	A-731	3000	3300	1450	EM	36	(17)	45	83	42	55	8	7 1/4	8	72	40	80	2	14.0	8.6	14.0	8.6	PI	PI	Pn	16 1/2-34	21x5	
	A-830	3000	3300	1450	GE	36		45	83	42	55	8 1/4	7 1/4	8	72	40	80	2	14.0	8.6	14.0	8.6	PI	PI	Pn	6.00-16	7.00-16	
	A-840	4000	4000	1600	GE	36		45	107 1/2	51	63	8 1/4	7 1/4	8	72	40	80	2	14.0	8.6	14.0	8.6	PI	PI	Pn	6.00-16	7.00-16	
	A-860	4000	4000	1600	GE	36		45	107 1/2	51	63	8 1/4	7 1/4	8	72	40	80	2	14.0	8.6	14.0	8.6	PI	PI	Pn	6.00-16	7.00-16	
	A-960	4000	4000	1600	GE	36		45	107 1/2	51	63	8 1/4	7 1/4	8	72	40	80	2	14.0	8.6	14.0	8.6	PI	PI	Pn	6.00-16	7.00-16	
Mobilift	40	4000	3600	1450	GL	12		62	95 1/2	64 1/2	60 1/2	11	5 1/4	120 1/2	40	80	90	2	14.0	8.6	14.0	8.6	PI	PI	Pn	6.50-16	6.50-16	
Reelwater	Go-Getter 52.30	700	1450	1450	W	12	Var	Var	Var	32	50	3 1/2	3 1/2		Var	Var	Var	2	2.5	2.5	2.5	1.5	27	Var	Var	Se	12x3 1/2	12x3 1/2
	Go-Getter 53.30	700	1450	1450	SE	12	Var	Var	Var	40	40	3 1/2	3 1/2		Var	Var	Var	2	2.5	2.5	2.5	1.5	27	Var	Var	Se	12x3 1/2	12x3 1/2
	Go-Getter 54.30	700	1450	1450	SE	12	Var	Var	Var	40	40	3 1/2	3 1/2		Var	Var	Var	2	2.5	2.5	2.5	1.5	27	Var	Var	Se	12x3 1/2	12x3 1/2
	Go-Getter 55.30	700	1450	1450	W	12	Var	Var	Var	40	40	3 1/2	3 1/2		Var	Var	Var	2	2.5	2.5	2.5	1.5	27	Var	Var	Se	12x3 1/2	12x3 1/2
Silent Hoiat	TK-25	25000	35000	35000	SE			103	172	114	10	9	170			170		6	15.0	6.0			Opt	Opt	Pn	10.00-20	10.00-24	
	TK-30	30000	39000	39000	SE			103	174	114	10	9	172			172		6	15.0	6.0			Opt	Opt	Pn	10.00-20	10.00-24	
Twinmotor	K-5-30	3000	3600	3600	S	12	53	38 1/2	67 1/2	40 1/2	54	8	3 1/2	64	9 1/2	64	9 1/2	56	2	10.0	11.5			E E M E	E E M E	Cu	17x4 1/2-12 1/2	22x8-16
	K-5-33	3000	3600	3600	S	12	53	38 1/2	67 1/2	40 1/2	54	8	3 1/2	64	9 1/2	64	9 1/2	56	2	10.0	11.5			E E M E	E E M E	Cu	17x4 1/2-12 1/2	22x8-16
	K-5-36	3000	3600	3600	S	12	53	38 1/2	67 1/2	40 1/2	54	8	3 1/2	64	9 1/2	64	9 1/2	56	2	10.0	11.5			E E M E	E E M E	Cu	17x4 1/2-12 1/2	22x8-16
	K-5-40	3000	3600	3600	S	12	53	38 1/2	67 1/2	40 1/2	54	8	3 1/2	64	9 1/2	64	9 1/2	56	2	10.0	11.5			E E M E	E E M E	Cu	17x4 1/2-12 1/2	22x8-16
Vale & Towne	K-2415	3000	3100	1470	E-G	12	480	38 1/2	67 1/2	39 1/2	50	8 1/4	2 1/2	78	57	43 1/2	37	57	4	6.5	6.5	6.5	6.5	Opt	Opt	Cu	18 1/2-34 11 1/2	21x5-16
	MTR-2	3000	2740	1470	SE	12	480	38 1/2	67 1/2	39 1/2	50	8 1/4	2 1/2	78	57	43 1/2	37	57	4	6.5	6.5	6.5	6.5	Opt	Opt	Cu	10x8-14 1/2	10x8-14 1/2
	MTR-3	3000	2740	1470	W	12	480	38 1/2	67 1/2	39 1/2	50	8 1/4	2 1/2	78	57	43 1/2	37	57	4	6.5	6.5	6.5	6.5	Opt	Opt	Se	10x8-14 1/2	10x8-14 1/2
	MTR-4	3000	2740	1470	W	12	480	38 1/2	67 1/2	39 1/2	50	8 1/4	2 1/2	78	57	43 1/2	37	57	4	6.5	6.5	6.5	6.5	Opt	Opt	Se	10x8-14 1/2	10x8-14 1/2
	MSQT	3000	2740	1470	W	12	480	38 1/2	67 1/2	39 1/2	50	8 1/4	2 1/2	78	57	43 1/2	37	57	4	6.5	6.5	6.5	6.5	Opt	Opt	Se	10x8-14 1/2	10x8-14 1/2
	RBF-60545068	3000	2740	1470	SE	12	480	38 1/2	67 1/2	39 1/2	50	8 1/4	2 1/2	78	57	43 1/2	37	57	4	6.5	6.5	6.5	6.5	Opt	Opt	Cu	10x8-14 1/2	10x8-14 1/2
	RBF-60545068	3000	2740	1470	SE	12	480	38 1/2	67 1/2	39 1/2	50	8 1/4	2 1/2	78	57	43 1/2	37	57	4	6.5	6.5	6.5	6.5	Opt	Opt	Se	10x8-14 1/2	10x8-14 1/2
	RBF-60545068	3000	2740	1470	SE	12	480	38 1/2	67 1/2	39 1/2	50	8 1/4	2 1/2	78	57	43 1/2	37	57	4	6.5	6.5	6.5	6.5	Opt	Opt	Se	10x8-14 1/2	10x8-14 1/2
	RBF-60545068	3000	2740	1470	SE	12	480	38 1/2	67 1/2	39 1/2	50	8 1/4	2 1/2	78	57	43 1/2	37	57	4	6.5	6.5	6.5	6.5	Opt	Opt	Se	10x8-14 1/2	10x8-14 1/2
	RBF-60545068	3000	2740	1470	SE	12	480	38 1/2	67 1/2	39 1/2	50	8 1/4	2 1/2	78	57	43 1/2	37	57	4	6.5	6.5	6.5	6.5	Opt	Opt	Se	10x8-14 1/2	10x8-14 1/2
	RBF-60545068	3000	2740	1470	SE	12	480	38 1/2	67 1/2	39 1/2	50	8 1/4	2 1/2	78	57	43 1/2	37	57	4	6.5	6.5	6.5	6.5	Opt	Opt	Se	10x8-14 1/2	10x8-14 1/2

## ABBREVIATIONS

- 1—Including battery.  
2—30 to 36.  
3—24 to 32.  
4—170 to 300.  
5—450 to 500.  
6—Combination steering and drive.  
7—Rear wheel.  
8—12 or 24.  
9—300 to 500.  
10—340 to 500.
- 11—340 to 500 plus.  
12—400/8 or 16/4.5.  
13—400/12 or 21x5.  
14—300 to 432.  
15—300 to 432.  
16—300 to 432.  
17—350 to 600.  
18—350 to 600.
- 19—Not including towing eyes.  
20—300 to 700.  
21—300 to 700.  
22—300 to 700.  
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99—300 to 700.  
100—300 to 700.
- GL—Gasoline or LPG engine.  
GLD—Gasoline, LPG or Diesel engine.  
GT—Gas turbine.  
Q—Optional.  
P—Pin.
- PC—Pneumatic or cushion.  
Pl—Pinlock book.  
Pn—Pneumatic.  
Se—Solid or cushion.  
SC—Solid or pneumatic.  
Se—Solid.
- Ss—Sits or stands.  
St—Stands.  
Un—Universal.  
Var—Various.  
W—Walks.

[illegible]

For Abbreviations and Symbols see Page 60



## POWERED HIGH-LIFT FORK OR PLATFORM TRUCKS (CONTINUED)

MAKE AND MODEL	POWER TYPE	MAST		OVERALL DIMENSIONS										TURNING RADIUS With 40" x 40" Pallet		BATTERY		SPEEDS With Capacity Load		TIRE SIZES					
		Lift	Metric	Tilt		Load Center (In.)	Length		Under-clearance		Height (In.)				Outside (Following) (In.)	Intersecting Aisle Width (In.)	Minimum Stacking (In.)	Normal Voltage	Forward (Mph.)	Hoisting (Fpm.)	Lowering (Fpm.)	Drive Wheels	Steering Wheels		
				Forward (Deg.)	Reverse (Deg.)		Whelbase (In.)	Face of Forks to Center-line of Forks to Center-line	Less Forks (In.)	Standard Fork (In.)	At Truck Center (In.)	At Mast (In.)	Free Lift (In.)	Minimum										Medium	Maximum
Operator—Sits, Stands, Walks	Lift—Fork or Platform	Service Weight (Lb.)—Including Battery	Maximum Load Capacity (Lb.)	S	Fk	Fk	Fk	Fk	Fk	Fk	Fk	Fk	Fk	Fk	Fk	Fk	Fk	Fk	Fk	Fk	Fk	Fk	Fk	Fk	
Baker—Cont.	FGA-050, FJA-050	5000	7740	GL	Hyd	Y	5	5	50	131 1/2	24	83 1/2	36	3	20	68	114	90	108	181	157	83	68 1/2	144 1/2	16x4 1/2
	FGD-050, FJD-050	5000	8820	GL	Hyd	Y	5	5	50	131 1/2	24	83 1/2	36	3	20	68	114	90	108	181	157	83	68 1/2	144 1/2	16x4 1/2
	FJA-050	5000	7600	GL	Hyd	Y	5	5	50	131 1/2	24	83 1/2	36	3	20	68	114	90	108	181	157	83	68 1/2	144 1/2	16x4 1/2
	FJD-050	5000	7600	GL	Hyd	Y	5	5	50	131 1/2	24	83 1/2	36	3	20	68	114	90	108	181	157	83	68 1/2	144 1/2	16x4 1/2
	FGD-060, FJD-060	6000	8950	GL	Hyd	Y	5	5	50	131 1/2	24	83 1/2	36	3	20	68	114	90	108	181	157	83	68 1/2	144 1/2	16x4 1/2
	FGD-060, FJK-060	6000	8950	GL	Hyd	Y	5	5	50	131 1/2	24	83 1/2	36	3	20	68	114	90	108	181	157	83	68 1/2	144 1/2	16x4 1/2
	FGD-060, FJF-060	6000	8950	GL	Hyd	Y	5	5	50	131 1/2	24	83 1/2	36	3	20	68	114	90	108	181	157	83	68 1/2	144 1/2	16x4 1/2
	FGD-060, FJF-060	6000	8950	GL	Hyd	Y	5	5	50	131 1/2	24	83 1/2	36	3	20	68	114	90	108	181	157	83	68 1/2	144 1/2	16x4 1/2
	FGD-060, FJF-060	6000	8950	GL	Hyd	Y	5	5	50	131 1/2	24	83 1/2	36	3	20	68	114	90	108	181	157	83	68 1/2	144 1/2	16x4 1/2
	FGD-060, FJF-060	6000	8950	GL	Hyd	Y	5	5	50	131 1/2	24	83 1/2	36	3	20	68	114	90	108	181	157	83	68 1/2	144 1/2	16x4 1/2
	FGD-060, FJF-060	6000	8950	GL	Hyd	Y	5	5	50	131 1/2	24	83 1/2	36	3	20	68	114	90	108	181	157	83	68 1/2	144 1/2	16x4 1/2
	FGD-060, FJF-060	6000	8950	GL	Hyd	Y	5	5	50	131 1/2	24	83 1/2	36	3	20	68	114	90	108	181	157	83	68 1/2	144 1/2	16x4 1/2
	FGD-060, FJF-060	6000	8950	GL	Hyd	Y	5	5	50	131 1/2	24	83 1/2	36	3	20	68	114	90	108	181	157	83	68 1/2	144 1/2	16x4 1/2
	FGD-060, FJF-060	6000	8950	GL	Hyd	Y	5	5	50	131 1/2	24	83 1/2	36	3	20	68	114	90	108	181	157	83	68 1/2	144 1/2	16x4 1/2
	FGD-060, FJF-060	6000	8950	GL	Hyd	Y	5	5	50	131 1/2	24	83 1/2	36	3	20	68	114	90	108	181	157	83	68 1/2	144 1/2	16x4 1/2
	FGD-060, FJF-060	6000	8950	GL	Hyd	Y	5	5	50	131 1/2	24	83 1/2	36	3	20	68	114	90	108	181	157	83	68 1/2	144 1/2	16x4 1/2
	FGD-060, FJF-060	6000	8950	GL	Hyd	Y	5	5	50	131 1/2	24	83 1/2	36	3	20	68	114	90	108	181	157	83	68 1/2	144 1/2	16x4 1/2
	FGD-060, FJF-060	6000	8950	GL	Hyd	Y	5	5	50	131 1/2	24	83 1/2	36	3	20	68	114	90	108	181	157	83	68 1/2	144 1/2	16x4 1/2
	FGD-060, FJF-060	6000	8950	GL	Hyd	Y	5	5	50	131 1/2	24	83 1/2	36	3	20	68	114	90	108	181	157	83	68 1/2	144 1/2	16x4 1/2
	FGD-060, FJF-060	6000	8950	GL	Hyd	Y	5	5	50	131 1/2	24	83 1/2	36	3	20	68	114	90	108	181	157	83	68 1/2	144 1/2	16x4 1/2
FGA-070, FJA-070	7000	10670	GL	Hyd	Y	10	5	54	15 1/2	24	86 1/2	36 1/2	3	15 1/2	68 1/2	116	90	108	181	157	83	68 1/2	144 1/2	16x4 1/2	
FJA-070	7000	10500	GL	Hyd	Y	10	5	54	15 1/2	24	86 1/2	36 1/2	3	15 1/2	68 1/2	116	90	108	181	157	83	68 1/2	144 1/2	16x4 1/2	
FJD-070	7000	10500	GL	Hyd	Y	10	5	54	15 1/2	24	86 1/2	36 1/2	3	15 1/2	68 1/2	116	90	108	181	157	83	68 1/2	144 1/2	16x4 1/2	
FGD-080	8000	9600	GL	Hyd	Y	12	5	60	17	24	87	42	5	22	73	120	90	108	181	157	83	68 1/2	144 1/2	16x4 1/2	
FGD-080	8000	9600	GL	Hyd	Y	12	5	60	17	24	87	42	5	22	73	120	90	108	181	157	83	68 1/2	144 1/2	16x4 1/2	
FGD-100	10000	10500	GL	Hyd	Y	10	3	72	20	36	121	42	5	4	60	120	90	108	181	157	83	68 1/2	144 1/2	16x4 1/2	
FGD-120	12000	15500	GL	Hyd	Y	10	3	78	20	32	127	42	5	4	60	120	90	108	181	157	83	68 1/2	144 1/2	16x4 1/2	
FGD-140	14000	18400	GL	Hyd	Y	10	3	78	20	32	127	42	5	4	60	120	90	108	181	157	83	68 1/2	144 1/2	16x4 1/2	
FGD-160	16000	20000	GL	Hyd	Y	10	3	78	20	32	127	42	5	4	60	120	90	108	181	157	83	68 1/2	144 1/2	16x4 1/2	
HPD-060	6000	8200	GL	Hyd	Y	5	5	50	131 1/2	24	83 1/2	36	3	20	68	114	90	108	181	157	83	68 1/2	144 1/2	16x4 1/2	
HPD-060	6000	8200	GL	Hyd	Y	5	5	50	131 1/2	24	83 1/2	36	3	20	68	114	90	108	181	157	83	68 1/2	144 1/2	16x4 1/2	
24TDP-040	4000	5000	GL	Hyd	Y	5	5	50	131 1/2	24	83 1/2	36	3	20	68	114	90	108	181	157	83	68 1/2	144 1/2	16x4 1/2	
24TDP-065	6500	11100	GL	Hyd	Y	5	5	50	131 1/2	24	83 1/2	36	3	20	68	114	90	108	181	157	83	68 1/2	144 1/2	16x4 1/2	
24TDP-065	6500	11100	GL	Hyd	Y	5	5	50	131 1/2	24	83 1/2	36	3	20	68	114	90	108	181	157	83	68 1/2	144 1/2	16x4 1/2	
24TDP-065	6500	11100	GL	Hyd	Y	5	5	50	131 1/2	24	83 1/2	36	3	20	68	114	90	108	181	157	83	68 1/2	144 1/2	16x4 1/2	
24TDP-065	6500	11100	GL	Hyd	Y	5	5	50	131 1/2	24	83 1/2	36	3	20	68	114	90	108	181	157	83	68 1/2	144 1/2	16x4 1/2	
24TDP-065	6500	11100	GL	Hyd	Y	5	5	50	131 1/2	24	83 1/2	36	3	20	68	114	90	108	181	157	83	68 1/2	144 1/2	16x4 1/2	
24TDP-065	6500	11100	GL	Hyd	Y	5	5	50	131 1/2	24	83 1/2	36	3	20	68	114	90	108	181	157	83	68 1/2	144 1/2	16x4 1/2	
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24TDP-065	6500	11100	GL	Hyd	Y	5	5	50	131 1/2	24	83 1/2	36	3	20	68	114	90	108	181	157	83	68 1/2	144 1/2	16x4 1/2	
24TDP-065	6500	11100	GL	Hyd	Y	5	5	50	131 1/2	24	83 1/2	36	3	20	68	114	90	108	181	157	83	68 1/2	144 1/2	16x4 1/2	
24TDP-065	6500	11100	GL	Hyd	Y	5	5	50	131 1/2	24	83 1/2	36	3	20	68	114	90	108	181	157	83	68 1/2	144 1/2	16x4 1/2	
24TDP-065	6500	11100	GL	Hyd	Y	5	5	50	131 1/2	24	83 1/2	36	3	20	68	114	90	108	181	157	83	68 1/2	144 1/2	16x4 1/2	
24TDP-065	6500	11100	GL	Hyd	Y	5	5	50	131 1/2	24	83 1/2	36	3	20	68	114	90	108	181	157	83	68 1/2	144 1/2	16x4 1/2	
24TDP-065	6500	11100	GL	Hyd	Y	5	5	50	131 1/2	24	83 1/2	36	3	20	68	114	90	108	181	157	83	68 1/2	144 1/2	16x4 1/2	
24TDP-065	6500	11100	GL	Hyd	Y	5	5	50	131 1/2	24	83 1/2	36	3	20	68	114	90	108	181	157	83	68 1/2	144 1/2	16x4 1/2	
24TDP-065	6500	11100	GL	Hyd	Y	5	5	50	131 1/2	24	83 1/2	36	3	20	68	114	90	108	181	157	83	68 1/2	144 1/2	16x4 1/2	
24TDP-065	6500	11100	GL	Hyd	Y	5	5	50	131 1/2	24	83 1/2	36	3	20	68	114	90	108	181	157	83	68 1/2	144 1/2	16x4 1/2	
24TDP-065	6500	11100	GL	Hyd	Y	5	5	50	131 1/2	24	83 1/2	36	3	20	68	114	90	108	181	157	83	68 1/2	144 1/2	16x4 1/2	
24TDP-065	6500	11100	GL	Hyd	Y	5	5	50	131 1/2	24	83 1/2	36	3	20	68	114	90	108	181	157	83	68 1/2	144 1/2	16x4 1/2	
24TDP-065	6500	11100	GL	Hyd	Y	5	5	50	131 1/2	24	83 1/2	36	3	20	68	114	90	108	181	157	83	68 1/2	144 1/2	16x4 1/2	
24TDP-065	6500	11100	GL	Hyd	Y	5	5	50	131 1/2	24	83 1/2	36	3	20	68	114	90	108	181	157	83	68 1/2	144 1/2	16x4 1/2	
24TDP-065	6500	11100	GL	Hyd	Y	5	5	50	131 1/2	24	83 1/2	36	3	20	68	114	90	108	181	157	83	68 1/2	144 1/2	16x4 1/2	
24TDP-065	6500	11100	GL	Hyd	Y	5	5	50	131 1/2	24	83 1/2	36	3	20	68	114	90	108	181	157	83	68 1/2	144 1/2	16x4 1/2	
24TDP-065	6500	11100	GL	Hyd	Y	5	5	50	131 1/2	24	83 1/2	36	3	20	68	114	90	108	181	157	83	68 1/2	144 1/2	16x4	



200-HL	3500	9400	13000	17000	21000	25000	29000	33000	37000	41000	45000	49000	53000	57000	61000	65000	69000	73000	77000	81000	85000	89000	93000	97000	101000	105000	109000	113000	117000	121000	125000	129000	133000	137000	141000	145000	149000	153000	157000	161000	165000	169000	173000	177000	181000	185000	189000	193000	197000	201000	205000	209000	213000	217000	221000	225000	229000	233000	237000	241000	245000	249000	253000	257000	261000	265000	269000	273000	277000	281000	285000	289000	293000	297000	301000	305000	309000	313000	317000	321000	325000	329000	333000	337000	341000	345000	349000	353000	357000	361000	365000	369000	373000	377000	381000	385000	389000	393000	397000	401000	405000	409000	413000	417000	421000	425000	429000	433000	437000	441000	445000	449000	453000	457000	461000	465000	469000	473000	477000	481000	485000	489000	493000	497000	501000	505000	509000	513000	517000	521000	525000	529000	533000	537000	541000	545000	549000	553000	557000	561000	565000	569000	573000	577000	581000	585000	589000	593000	597000	601000	605000	609000	613000	617000	621000	625000	629000	633000	637000	641000	645000	649000	653000	657000	661000	665000	669000	673000	677000	681000	685000	689000	693000	697000	701000	705000	709000	713000	717000	721000	725000	729000	733000	737000	741000	745000	749000	753000	757000	761000	765000	769000	773000	777000	781000	785000	789000	793000	797000	801000	805000	809000	813000	817000	821000	825000	829000	833000	837000	841000	845000	849000	853000	857000	861000	865000	869000	873000	877000	881000	885000	889000	893000	897000	901000	905000	909000	913000	917000	921000	925000	929000	933000	937000	941000	945000	949000	953000	957000	961000	965000	969000	973000	977000	981000	985000	989000	993000	997000	1001000	1005000	1009000	1013000	1017000	1021000	1025000	1029000	1033000	1037000	1041000	1045000	1049000	1053000	1057000	1061000	1065000	1069000	1073000	1077000	1081000	1085000	1089000	1093000	1097000	1101000	1105000	1109000	1113000	1117000	1121000	1125000	1129000	1133000	1137000	1141000	1145000	1149000	1153000	1157000	1161000	1165000	1169000	1173000	1177000	1181000	1185000	1189000	1193000	1197000	1201000	1205000	1209000	1213000	1217000	1221000	1225000	1229000	1233000	1237000	1241000	1245000	1249000	1253000	1257000	1261000	1265000	1269000	1273000	1277000	1281000	1285000	1289000	1293000	1297000	1301000	1305000	1309000	1313000	1317000	1321000	1325000	1329000	1333000	1337000	1341000	1345000	1349000	1353000	1357000	1361000	1365000	1369000	1373000	1377000	1381000	1385000	1389000	1393000	1397000	1401000	1405000	1409000	1413000	1417000	1421000	1425000	1429000	1433000	1437000	1441000	1445000	1449000	1453000	1457000	1461000	1465000	1469000	1473000	1477000	1481000	1485000	1489000	1493000	1497000	1501000	1505000	1509000	1513000	1517000	1521000	1525000	1529000	1533000	1537000	1541000	1545000	1549000	1553000	1557000	1561000	1565000	1569000	1573000	1577000	1581000	1585000	1589000	1593000	1597000	1601000	1605000	1609000	1613000	1617000	1621000	1625000	1629000	1633000	1637000	1641000	1645000	1649000	1653000	1657000	1661000	1665000	1669000	1673000	1677000	1681000	1685000	1689000	1693000	1697000	1701000	1705000	1709000	1713000	1717000	1721000	1725000	1729000	1733000	1737000	1741000	1745000	1749000	1753000	1757000	1761000	1765000	1769000	1773000	1777000	1781000	1785000	1789000	1793000	1797000	1801000	1805000	1809000	1813000	1817000	1821000	1825000	1829000	1833000	1837000	1841000	1845000	1849000	1853000	1857000	1861000	1865000	1869000	1873000	1877000	1881000	1885000	1889000	1893000	1897000	1901000	1905000	1909000	1913000	1917000	1921000	1925000	1929000	1933000	1937000	1941000	1945000	1949000	1953000	1957000	1961000	1965000	1969000	1973000	1977000	1981000	1985000	1989000	1993000	1997000	2001000	2005000	2009000	2013000	2017000	2021000	2025000	2029000	2033000	2037000	2041000	2045000	2049000	2053000	2057000	2061000	2065000	2069000	2073000	2077000	2081000	2085000	2089000	2093000	2097000	2101000	2105000	2109000	2113000	2117000	2121000	2125000	2129000	2133000	2137000	2141000	2145000	2149000	2153000	2157000	2161000	2165000	2169000	2173000	2177000	2181000	2185000	2189000	2193000	2197000	2201000	2205000	2209000	2213000	2217000	2221000	2225000	2229000	2233000	2237000	2241000	2245000	2249000	2253000	2257000	2261000	2265000	2269000	2273000	2277000	2281000	2285000	2289000	2293000	2297000	2301000	2305000	2309000	2313000	2317000	2321000	2325000	2329000	2333000	2337000	2341000	2345000	2349000	2353000	2357000	2361000	2365000	2369000	2373000	2377000	2381000	2385000	2389000	2393000	2397000	2401000	2405000	2409000	2413000	2417000	2421000	2425000	2429000	2433000	2437000	2441000	2445000	2449000	2453000	2457000	2461000	2465000	2469000	2473000	2477000	2481000	2485000	2489000	2493000	2497000	2501000	2505000	2509000	2513000	2517000	2521000	2525000	2529000	2533000	2537000	2541000	2545000	2549000	2553000	2557000	2561000	2565000	2569000	2573000	2577000	2581000	2585000	2589000	2593000	2597000	2601000	2605000	2609000	2613000	2617000	2621000	2625000	2629000	2633000	2637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## POWERED HIGH-LIFT FORK OR PLATFORM TRUCKS (CONTINUED)

MAKE MODEL	POWER TYPE		MAST		OVERALL DIMENSIONS										TURNING RADII With 40" x 48" Pallet			BATTERY		SPEEDS With Capacity Load		TIRE SIZES						
	Lift	Telescopic	Tilt		Wheelbase (In.)	Face of Forks to Center- line of Front Axle (In.)	Length		Under- clearance	Height (In.)				Outside (Following) (In.)	Intersecting Aisle Width (In.)	Minimum Aisle for Right Angle Stacking (In.)	Normal Voltage	Amperes Hours	Forward (Mph.)	Holding (Fpm.)	Lowering (Fpm.)	Drive Wheels	Steering Wheels					
			Forward (Deg.)	Reverse (Deg.)			Standard Fork (In.)	Load Center (In.)		Minimum	Maximum	Minimum	Maximum															
Operator—Stcs, Stands, Walks																												
Service Weight (Lb.)—																												
Maximum Load Capacity (Lb.)																												
Ewell-Parker-Cont.	IF-3872	Y	10	5	43 1/2	14	24 1/2	65 1/2	36	41 1/2	31 1/2	17	63	118	100	83	148	130	148	56	55	118	32	6	60	45	17 1/2 x 5	9 x 5
	IF-3873	Y	10	5	47 1/2	14 1/2	24 1/2	68 1/2	36	41 1/2	26 1/2	50	68	118	100	83	148	130	148	60	57	122 1/2	32	15	30	20	18 x 6	10 x 5 1/2
	IF-3874	Y	10	5	47 1/2	14 1/2	24 1/2	68 1/2	36	41 1/2	26 1/2	50	68	118	100	83	148	130	148	60	57	122 1/2	32	15	30	20	18 x 6	10 x 5 1/2
	IF-3875	Y	10	5	47 1/2	14 1/2	24 1/2	68 1/2	36	41 1/2	26 1/2	50	68	118	100	83	148	130	148	60	57	122 1/2	32	15	30	20	18 x 6	10 x 5 1/2
	IF-3876	Y	10	5	47 1/2	14 1/2	24 1/2	68 1/2	36	41 1/2	26 1/2	50	68	118	100	83	148	130	148	60	57	122 1/2	32	15	30	20	18 x 6	10 x 5 1/2
	IF-3877	Y	10	5	47 1/2	14 1/2	24 1/2	68 1/2	36	41 1/2	26 1/2	50	68	118	100	83	148	130	148	60	57	122 1/2	32	15	30	20	18 x 6	10 x 5 1/2
	IF-3878	Y	10	5	47 1/2	14 1/2	24 1/2	68 1/2	36	41 1/2	26 1/2	50	68	118	100	83	148	130	148	60	57	122 1/2	32	15	30	20	18 x 6	10 x 5 1/2
	IF-3879	Y	10	5	47 1/2	14 1/2	24 1/2	68 1/2	36	41 1/2	26 1/2	50	68	118	100	83	148	130	148	60	57	122 1/2	32	15	30	20	18 x 6	10 x 5 1/2
	IF-3880	Y	10	5	47 1/2	14 1/2	24 1/2	68 1/2	36	41 1/2	26 1/2	50	68	118	100	83	148	130	148	60	57	122 1/2	32	15	30	20	18 x 6	10 x 5 1/2
	IF-3881	Y	10	5	47 1/2	14 1/2	24 1/2	68 1/2	36	41 1/2	26 1/2	50	68	118	100	83	148	130	148	60	57	122 1/2	32	15	30	20	18 x 6	10 x 5 1/2
	IF-3882	Y	10	5	47 1/2	14 1/2	24 1/2	68 1/2	36	41 1/2	26 1/2	50	68	118	100	83	148	130	148	60	57	122 1/2	32	15	30	20	18 x 6	10 x 5 1/2
	IF-3883	Y	10	5	47 1/2	14 1/2	24 1/2	68 1/2	36	41 1/2	26 1/2	50	68	118	100	83	148	130	148	60	57	122 1/2	32	15	30	20	18 x 6	10 x 5 1/2
	IF-3884	Y	10	5	47 1/2	14 1/2	24 1/2	68 1/2	36	41 1/2	26 1/2	50	68	118	100	83	148	130	148	60	57	122 1/2	32	15	30	20	18 x 6	10 x 5 1/2
	IF-3885	Y	10	5	47 1/2	14 1/2	24 1/2	68 1/2	36	41 1/2	26 1/2	50	68	118	100	83	148	130	148	60	57	122 1/2	32	15	30	20	18 x 6	10 x 5 1/2
	IF-3886	Y	10	5	47 1/2	14 1/2	24 1/2	68 1/2	36	41 1/2	26 1/2	50	68	118	100	83	148	130	148	60	57	122 1/2	32	15	30	20	18 x 6	10 x 5 1/2
	IF-3887	Y	10	5	47 1/2	14 1/2	24 1/2	68 1/2	36	41 1/2	26 1/2	50	68	118	100	83	148	130	148	60	57	122 1/2	32	15	30	20	18 x 6	10 x 5 1/2
	IF-3888	Y	10	5	47 1/2	14 1/2	24 1/2	68 1/2	36	41 1/2	26 1/2	50	68	118	100	83	148	130	148	60	57	122 1/2	32	15	30	20	18 x 6	10 x 5 1/2
	IF-3889	Y	10	5	47 1/2	14 1/2	24 1/2	68 1/2	36	41 1/2	26 1/2	50	68	118	100	83	148	130	148	60	57	122 1/2	32	15	30	20	18 x 6	10 x 5 1/2
	IF-3890	Y	10	5	47 1/2	14 1/2	24 1/2	68 1/2	36	41 1/2	26 1/2	50	68	118	100	83	148	130	148	60	57	122 1/2	32	15	30	20	18 x 6	10 x 5 1/2
	IF-3891	Y	10	5	47 1/2	14 1/2	24 1/2	68 1/2	36	41 1/2	26 1/2	50	68	118	100	83	148	130	148	60	57	122 1/2	32	15	30	20	18 x 6	10 x 5 1/2
	IF-3892	Y	10	5	47 1/2	14 1/2	24 1/2	68 1/2	36	41 1/2	26 1/2	50	68	118	100	83	148	130	148	60	57	122 1/2	32	15	30	20	18 x 6	10 x 5 1/2
	IF-3893	Y	10	5	47 1/2	14 1/2	24 1/2	68 1/2	36	41 1/2	26 1/2	50	68	118	100	83	148	130	148	60	57	122 1/2	32	15	30	20	18 x 6	10 x 5 1/2
	IF-3894	Y	10	5	47 1/2	14 1/2	24 1/2	68 1/2	36	41 1/2	26 1/2	50	68	118	100	83	148	130	148	60	57	122 1/2	32	15	30	20	18 x 6	10 x 5 1/2
	IF-3895	Y	10	5	47 1/2	14 1/2	24 1/2	68 1/2	36	41 1/2	26 1/2	50	68	118	100	83	148	130	148	60	57	122 1/2	32	15	30	20	18 x 6	10 x 5 1/2
	IF-3896	Y	10	5	47 1/2	14 1/2	24 1/2	68 1/2	36	41 1/2	26 1/2	50	68	118	100	83	148	130	148	60	57	122 1/2	32	15	30	20	18 x 6	10 x 5 1/2
IF-3897	Y	10	5	47 1/2	14 1/2	24 1/2	68 1/2	36	41 1/2	26 1/2	50	68	118	100	83	148	130	148	60	57	122 1/2	32	15	30	20	18 x 6	10 x 5 1/2	
IF-3898	Y	10	5	47 1/2	14 1/2	24 1/2	68 1/2	36	41 1/2	26 1/2	50	68	118	100	83	148	130	148	60	57	122 1/2	32	15	30	20	18 x 6	10 x 5 1/2	
IF-3899	Y	10	5	47 1/2	14 1/2	24 1/2	68 1/2	36	41 1/2	26 1/2	50	68	118	100	83	148	130	148	60	57	122 1/2	32	15	30	20	18 x 6	10 x 5 1/2	
IF-3900	Y	10	5	47 1/2	14 1/2	24 1/2	68 1/2	36	41 1/2	26 1/2	50	68	118	100	83	148	130	148	60	57	122 1/2	32	15	30	20	18 x 6	10 x 5 1/2	
IF-3901	Y	10	5	47 1/2	14 1/2	24 1/2	68 1/2	36	41 1/2	26 1/2	50	68	118	100	83	148	130	148	60	57	122 1/2	32	15	30	20	18 x 6	10 x 5 1/2	
IF-3902	Y	10	5	47 1/2	14 1/2	24 1/2	68 1/2	36	41 1/2	26 1/2	50	68	118	100	83	148	130	148	60	57	122 1/2	32	15	30	20	18 x 6	10 x 5 1/2	
IF-3903	Y	10	5	47 1/2	14 1/2	24 1/2	68 1/2	36	41 1/2	26 1/2	50	68	118	100	83	148	130	148	60	57	122 1/2	32	15	30	20	18 x 6	10 x 5 1/2	
IF-3904	Y	10	5	47 1/2	14 1/2	24 1/2	68 1/2	36	41 1/2	26 1/2	50	68	118	100	83	148	130	148	60	57	122 1/2	32	15	30	20	18 x 6	10 x 5 1/2	
IF-3905	Y	10	5	47 1/2	14 1/2	24 1/2	68 1/2	36	41 1/2	26 1/2	50	68	118	100	83	148	130	148	60	57	122 1/2	32	15	30	20	18 x 6	10 x 5 1/2	
IF-3906	Y	10	5	47 1/2	14 1/2	24 1/2	68 1/2	36	41 1/2	26 1/2	50	68	118	100	83	148	130	148	60	57	122 1/2	32	15	30	20	18 x 6	10 x 5 1/2	
IF-3907	Y	10	5	47 1/2	14 1/2	24 1/2	68 1/2	36	41 1/2	26 1/2	50	68	118	100	83	148	130	148	60	57	122 1/2	32	15	30	20	18 x 6	10 x 5 1/2	
IF-3908	Y	10	5	47 1/2	14 1/2	24 1/2	68 1/2	36	41 1/2	26 1/2	50	68	118	100	83	148	130	148	60	57	122 1/2	32	15	30	20	18 x 6	10 x 5 1/2	
IF-3909	Y	10	5	47 1/2	14 1/2	24 1/2	68 1/2	36	41 1/2	26 1/2	50	68	118	100	83	148	130	148	60	57	122 1/2	32	15	30	20	18 x 6	10 x 5 1/2	
IF-3910	Y	10	5	47 1/2	14 1/2	24 1/2	68 1/2	36	41 1/2	26 1/2	50	68	118	100	83	148	130	148	60	57	122 1/2	32	15	30	20	18 x 6	10 x 5 1/2	
IF-3911	Y	10	5	47 1/2	14 1/2	24 1/2	68 1/2	36	41 1/2	26 1/2	50	68	118	100	83	148	130	148	60	57	122 1/2	32	15	30	20	18 x 6	10 x 5 1/2	
IF-3912	Y	10	5	47 1/2	14 1/2	24 1/2	68 1/2	36	41 1/2	26 1/2	50	68	118	100	83	148	130	148	60	57	122 1/2	32	15	30	20	18 x 6	10 x 5 1/2	
IF-3913	Y	10	5	47 1/2	14 1/2	24 1/2	68 1/2	36	41 1/2	26 1/2	50	68	118	100	83	148	130	148	60	57	122 1/2	32	15	30	20	18 x 6	10 x 5 1/2	
IF-3914	Y	10	5	47 1/2	14 1/2	24 1/2	68 1/2	36	41 1/2	26 1/2	50	68	118	100	83	148	130	148	60	57	122 1/2	32	15	30	20	18 x 6	10 x 5 1/2	
IF-3915	Y	10	5	47 1/2	14 1/2	24 1/2	68 1/2	36	41 1/2	26 1/2	50	68	118	100	83	148	130	148	60	57	122 1/2	32	15	30	20	18 x 6	10 x 5 1/2	
IF-3916	Y	10	5	47 1/2	14 1/2	24 1/2	68 1/2	36	41 1/2	26 1/2	50	68	118	100	83	148	130	148	60	57	122 1/2	32	15	30	20	18 x 6	10 x 5 1/2	
IF-3917	Y	10	5	47 1/2	14 1/2	24 1/2	68 1/2	36	41 1/2	26 1/2	50	68	118	100	83	148	130	148	60	57	122 1/2	32	15	30	20	18 x 6	10 x 5 1/2	
IF-3918	Y	10	5	47 1/2	14 1/2	24 1/2	68 1/2	36	41 1/2	26 1/2	50	68	118	100	83	148	130	148	60	57	122 1/2	32	15	30	20	18 x 6	10 x 5 1/2	
IF-3919	Y	10	5	47 1/2	14 1/2	24 1/2	68 1/2	36	41 1/2	26 1/2	50	68	118	100	83	148	130	148	60	57	122 1/2	32	15	30	20	18 x 6	10 x 5 1/2	
IF-3920	Y	10	5	47 1/2	14 1/2	24 1/2																						

1N-307	30000	42000	37	36	235	48	13	1334	N	146	204	120	206	324	240	324	256	42	188	317	12	70	15.3	34	38	13.00	20	Dual	13.00	20			
1H-32	32000	45730	39	36	252	72	15	12	N	146	204	120	206	324	240	324	257	48	209	346	12	140	14.2	35	45	14.00	24	Dual	14.00	24			
1H-36	36000	47630	40	36	267	72	15	12	N	146	204	120	206	324	240	324	257	48	209	346	12	140	14.2	35	45	14.00	24	Dual	14.00	24			
1H-40	40000	48600	41	36	287	72	15	12	N	146	204	120	206	324	240	324	257	48	209	346	12	140	14.2	35	45	14.00	24	Dual	14.00	24			
1H-40	40000	49150	41	36	287	72	15	12	N	146	204	120	206	324	240	324	257	48	209	346	12	140	14.2	35	45	14.00	24	Dual	14.00	24			
1H-45	45000	50700	43	36	308	72	20	12	N	170	222	120	224	342	240	358	277	60	218	412	12	153	15.5	40	45	14.00	24	Dual	14.00	24			
1H-45	45000	50700	43	36	308	72	20	12	N	170	222	120	224	342	240	358	277	60	218	412	12	153	15.5	40	45	14.00	24	Dual	14.00	24			
FL-124	1200	3500	71	24	54	42	3	31	N	68					144		47			103	12	40	3.5	50			10	3.5	9.5				
FCL-1200	1200	2400	3	44	124	24	69			65		72	80		130		633	03	793	1273	420	5.5	60	60	16	16.5	16.5	16.5	16.5	16.5			
FCL-2000	2000	4100	3	44	124	24	69			65		72	80		130		633	03	793	1273	420	5.5	60	60	16	16.5	16.5	16.5	16.5	16.5			
FCL-3000	3000	6200	3	44	124	24	69			65		72	80		130		633	03	793	1273	420	5.5	60	60	16	16.5	16.5	16.5	16.5	16.5			
FCL-4000	4000	8300	3	44	124	24	69			65		72	80		130		633	03	793	1273	420	5.5	60	60	16	16.5	16.5	16.5	16.5	16.5			
FCL-5000	5000	10400	3	44	124	24	69			65		72	80		130		633	03	793	1273	420	5.5	60	60	16	16.5	16.5	16.5	16.5	16.5			
PTL-2000	2000	3700	3	34	124	24	62			65		72	80		130		513	0	573	1143	420	4.5	60	60	16	16.5	16.5	16.5	16.5	16.5			
PTL-3000	3000	5400	3	34	124	24	62			65		72	80		130		513	0	573	1143	420	4.5	60	60	16	16.5	16.5	16.5	16.5	16.5			
PTL-4000	4000	7100	3	34	124	24	62			65		72	80		130		513	0	573	1143	420	4.5	60	60	16	16.5	16.5	16.5	16.5	16.5			
PTL-5000	5000	8800	3	34	124	24	62			65		72	80		130		513	0	573	1143	420	4.5	60	60	16	16.5	16.5	16.5	16.5	16.5			
DTL-2000	2000	4200	3	35	124	24	59			65		72	80		130		513	0	573	1143	420	4.5	60	60	16	16.5	16.5	16.5	16.5	16.5			
DTL-3000	3000	6300	3	35	124	24	59			65		72	80		130		513	0	573	1143	420	4.5	60	60	16	16.5	16.5	16.5	16.5	16.5			
DTL-4000	4000	8400	3	35	124	24	59			65		72	80		130		513	0	573	1143	420	4.5	60	60	16	16.5	16.5	16.5	16.5	16.5			
DTL-5000	5000	10500	3	35	124	24	59			65		72	80		130		513	0	573	1143	420	4.5	60	60	16	16.5	16.5	16.5	16.5	16.5			
STL-2000	2000	3200	3	48	124	24	71			65		72	80		144		673	03	743	1313	420	5.5	60	60	16	16.5	16.5	16.5	16.5	16.5			
STL-3000	3000	4900	3	48	124	24	71			65		72	80		144		673	03	743	1313	420	5.5	60	60	16	16.5	16.5	16.5	16.5	16.5			
STL-4000	4000	6600	3	48	124	24	71			65		72	80		144		673	03	743	1313	420	5.5	60	60	16	16.5	16.5	16.5	16.5	16.5			
STL-5000	5000	8300	3	48	124	24	71			65		72	80		144		673	03	743	1313	420	5.5	60	60	16	16.5	16.5	16.5	16.5	16.5			
3K-HDP-30	3000	6000	5000	6000	243	75	362	4	3	8										38	792	6.0	40	700	15	6.00	9	6.00	9	6.00			
3K-HDP-40	4000	8000	5000	6000	243	75	362	4	3	8										38	792	6.0	40	700	15	6.00	9	6.00	9	6.00			
3K-HOS-40	4000	8000	5000	6000	243	75	362	4	3	8										38	792	6.0	40	700	15	6.00	9	6.00	9	6.00			
3K-HOS-50	5000	7000	5000	6000	243	75	362	4	3	8										38	792	6.0	40	700	15	6.00	9	6.00	9	6.00			
H-30	3000	6500	11	4	593	19	24	90	42	6	4	6	4	6	4	6	4	6	4	6	100	13.8	62	250	7.50	15	6.00	9	6.00	9	6.00		
H-40	4000	7570	11	4	593	19	24	90	42	6	4	6	4	6	4	6	4	6	4	6	100	13.8	62	250	7.50	15	6.00	9	6.00	9	6.00		
H-50	5000	8210	11	4	593	19	24	90	42	6	4	6	4	6	4	6	4	6	4	6	100	13.8	62	250	7.50	15	6.00	9	6.00	9	6.00		
H-360	36000	51450	39	36	237	982	20	14	N	137		125	103	95	173	151	167	83	11	72	139	12	150	15.0	48	97	14.00	24	Dual	14.00	24		
H-150	15000	19500	10	165	38	26	237	982	20	14	N	137		125	103	95	173	151	167	83	11	72	139	12	150	15.0	48	97	14.00	24	Dual	14.00	24
H-180	18000	21400	10	165	38	26	237	982	20	14	N	137		125	103	95	173	151	167	83	11	72	139	12	150	15.0	48	97	14.00	24	Dual	14.00	24
H-200	20000	23400	10	165	38	26	237	982	20	14	N	137		125	103	95	173	151	167	83	11	72	139	12	150	15.0	48	97	14.00	24	Dual	14.00	24
SS-30	3000	5920	12	6	51	12	24	78	542	5	3	6	6	6	6	6	6	6	6	100	10.1	68	120	6.00	9	6.00	9	6.00	9	6.00	9	6.00	
SS-40	4000	6570	12	6	51	12	24	78	542	5	3	6	6	6	6	6	6	6	6	100	10.1	68	120	6.00	9	6.00	9	6.00	9	6.00	9	6.00	
SS-50	5000	7400	12	6	51	12	24	78	542	5	3	6	6	6	6	6	6	6	6	100	10.1	68	120	6.00	9	6.00	9	6.00	9	6.00	9	6.00	
H-20A	2000	4380	11	5	65	21	24	110	483	4	3	6	6	6	6	6	6	6	6	100	10.1	68	120	6.00	9	6.00	9	6.00	9	6.00	9	6.00	
H-20B	2000	4380	11	5	65	21	24	110	483	4	3	6	6	6	6	6	6	6	6	100	10.1	68	120	6.00	9	6.00	9	6.00	9	6.00	9	6.00	
H-20C	2000	4380	11	5	65	21	24	110	483	4	3	6	6	6	6	6	6	6	6	100	10.1	68	120	6.00	9	6.00	9	6.00	9	6.00	9	6.00	
H-20D	2000	4380	11	5	65	21	24	110	483	4	3	6	6	6	6	6	6	6	6	100	10.1	68	120	6.00	9	6.00	9	6.00	9	6.00	9	6.00	
H-20E	2000	4380	11	5	65	21	24	110	483	4	3	6	6	6	6	6	6	6	6	100	10.1	68	120	6.00	9	6.00	9	6.00	9	6.00	9	6.00	
H-20F	2000	4380	11	5	65	21	24	110	483	4	3	6	6	6	6	6	6	6	6	100	10.1	68	120	6.00	9	6.00	9	6.00	9	6.00	9	6.00	
H-20G	2000	4380	11	5	65	21	24	110	483	4	3	6	6	6	6	6	6	6	6	100	10.1	68	120	6.00	9	6.00	9	6.00	9	6.00	9	6.00	
H-20H	2000	4380	11	5	65	21	24	110	483	4	3	6	6	6	6	6	6	6	6	100	10.1	68	120	6.00	9	6.00	9	6.00	9	6.00	9	6.00	
H-20I	2000	4380	11	5	65	21	24	110	483	4	3	6	6	6	6	6	6	6	6	100	10.1	68	120	6.00	9	6.00	9	6.00	9	6.00	9	6.00	
H-20J	2000	4380	11	5	65	21	24	110	483	4	3	6	6	6	6	6	6	6	6	100	10.1	68	120	6.00	9	6.00	9	6.00	9	6.00	9	6.00	
H-20K	2000	4380	11	5	65	21	24	110	483	4	3	6	6	6	6	6	6	6	6	100	10.1	68	120	6.00	9	6.00	9	6.00	9	6.00	9	6.00	
H-20L	2000	4380	11	5	65	21	24	110	483	4	3	6	6	6	6	6	6	6	6	100	10.1	68	120	6.00	9	6.00	9	6.00	9	6.00	9	6.00	
H-20M	2000	4380	11	5	65	21	24	110	483	4	3	6	6	6	6	6	6	6	6	100	10.1	68	120	6.00									



# POWERED HIGH-LIFT FORK OR PLATFORM TRUCKS (CONTINUED)

MAKE AND MODEL	Maximum Load Capacity (Lb.) — Service Weight (Lb.) — Excluding Battery (Lb.) —	Operator—Sit, Stand, Walks	Lift—Fork or Platform	POWER TYPE	MAST		OVERALL DIMENSIONS										TURNING RADIUS With 40" x 48" Pallet		BATTERY		SPEEDS With Capacity Load		TIRE SIZES																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
					Tilt	Telescopic	Wheelbase (In.)	Face of Forks to Center- line of Front Axle (In.)	Load Center (In.)	Length		Under-clearance	Height (In.)				Maximum Overall- Including Carriage or Backguard	Outside (Trailwing) (In.)	Inside (In.)	Intersecting Aisle Width (In.)	Minimum Aisle for Right Angle Stacking (In.)	Normal Voltage	Amperes Hours	Forward (Mph.)	Hoisting (Fpm.)	Lowering (Fpm.)	Drive Wheels	Steering Wheels																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
										Standard Forks (In.)	At Truck Center (In.)		At Mast (In.)	Free Lift (In.)	Mast Collapsed	Mast Extended													Mast Collapsed	Mast Extended	Mast Collapsed	Mast Extended	Lifting																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
Lewis-Shepard—Cont.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
1000	1500	S	FL	EM	Y	10	3	41	12 1/2	24 1/2	55 1/2	36	2	3	12 1/2	18 1/2	104	203	160	203	104	182	157	182	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	144	129	1



For Abbreviations and Symbols see Page 60

# POWERED HIGH-LIFT FORK OR PLATFORM TRUCKS (CONTINUED)

MAKE AND MODEL	Maximum Load Capacity (Lb.)	POWER TYPE	MAST	OVERALL DIMENSIONS										TURNING RADIUS With 40" x 48" Pallet	BATTERY		SPEEDS With Capacity Load		TIRE SIZES							
				Lift	Telescopic	Tilt		Wheelbase (In.)	Face of Forks to Center- line of Front Axle (In.)	Load Center (In.)	Length		Under- clear- ance		Height (In.)				Minimum Aisle for Right Angle Stacking (In.)	Normal Voltage	Amperes Hours	Forward (Mph.)	Retracting (Fpm.)	Lowering (Fpm.)	Drive Wheels	Steering Wheels
						Forward (Deg.)	Forward (Deg.)				Standard Fork (In.)	At Fork (In.)			At Mast (In.)	Free Lift (In.)	Mast Collapsed	Mast Extended								
Raymond—Cont.	3700	EM	Y	Hyd	Y	N	48 1/2	N	24	30	30	2	40	83	N	116	N	170 1/2	79	800	3.5	25	Var	10x5	10x5	
	3800	EM	Y	Hyd	Y	N	48 1/2	N	24	30	30	2	40	83	N	116	N	170 1/2	79	800	3.5	25	Var	10x5	10x5	
	4000	EM	Y	Hyd	Y	N	48 1/2	N	24	30	30	2	40	83	N	116	N	170 1/2	79	800	3.5	25	Var	10x5	10x5	
	4200	EM	Y	Hyd	Y	N	48 1/2	N	24	30	30	2	40	83	N	116	N	170 1/2	79	800	3.5	25	Var	10x5	10x5	
	4400	EM	Y	Hyd	Y	N	48 1/2	N	24	30	30	2	40	83	N	116	N	170 1/2	79	800	3.5	25	Var	10x5	10x5	
	4600	EM	Y	Hyd	Y	N	48 1/2	N	24	30	30	2	40	83	N	116	N	170 1/2	79	800	3.5	25	Var	10x5	10x5	
	4800	EM	Y	Hyd	Y	N	48 1/2	N	24	30	30	2	40	83	N	116	N	170 1/2	79	800	3.5	25	Var	10x5	10x5	
	5000	EM	Y	Hyd	Y	N	48 1/2	N	24	30	30	2	40	83	N	116	N	170 1/2	79	800	3.5	25	Var	10x5	10x5	
	5200	EM	Y	Hyd	Y	N	48 1/2	N	24	30	30	2	40	83	N	116	N	170 1/2	79	800	3.5	25	Var	10x5	10x5	
	5400	EM	Y	Hyd	Y	N	48 1/2	N	24	30	30	2	40	83	N	116	N	170 1/2	79	800	3.5	25	Var	10x5	10x5	
Revolver	4500	EM	Y	Hyd	Y	N	48 1/2	N	24	30	30	2	40	83	N	116	N	170 1/2	79	800	3.5	25	Var	10x5	10x5	
	4600	EM	Y	Hyd	Y	N	48 1/2	N	24	30	30	2	40	83	N	116	N	170 1/2	79	800	3.5	25	Var	10x5	10x5	
	4700	EM	Y	Hyd	Y	N	48 1/2	N	24	30	30	2	40	83	N	116	N	170 1/2	79	800	3.5	25	Var	10x5	10x5	
	4800	EM	Y	Hyd	Y	N	48 1/2	N	24	30	30	2	40	83	N	116	N	170 1/2	79	800	3.5	25	Var	10x5	10x5	
	4900	EM	Y	Hyd	Y	N	48 1/2	N	24	30	30	2	40	83	N	116	N	170 1/2	79	800	3.5	25	Var	10x5	10x5	
	5000	EM	Y	Hyd	Y	N	48 1/2	N	24	30	30	2	40	83	N	116	N	170 1/2	79	800	3.5	25	Var	10x5	10x5	
	5100	EM	Y	Hyd	Y	N	48 1/2	N	24	30	30	2	40	83	N	116	N	170 1/2	79	800	3.5	25	Var	10x5	10x5	
	5200	EM	Y	Hyd	Y	N	48 1/2	N	24	30	30	2	40	83	N	116	N	170 1/2	79	800	3.5	25	Var	10x5	10x5	
	5300	EM	Y	Hyd	Y	N	48 1/2	N	24	30	30	2	40	83	N	116	N	170 1/2	79	800	3.5	25	Var	10x5	10x5	
	5400	EM	Y	Hyd	Y	N	48 1/2	N	24	30	30	2	40	83	N	116	N	170 1/2	79	800	3.5	25	Var	10x5	10x5	
Scott	3500	EM	Y	Hyd	Y	N	48 1/2	N	24	30	30	2	40	83	N	116	N	170 1/2	79	800	3.5	25	Var	10x5	10x5	
	3600	EM	Y	Hyd	Y	N	48 1/2	N	24	30	30	2	40	83	N	116	N	170 1/2	79	800	3.5	25	Var	10x5	10x5	
	3700	EM	Y	Hyd	Y	N	48 1/2	N	24	30	30	2	40	83	N	116	N	170 1/2	79	800	3.5	25	Var	10x5	10x5	
	3800	EM	Y	Hyd	Y	N	48 1/2	N	24	30	30	2	40	83	N	116	N	170 1/2	79	800	3.5	25	Var	10x5	10x5	
	3900	EM	Y	Hyd	Y	N	48 1/2	N	24	30	30	2	40	83	N	116	N	170 1/2	79	800	3.5	25	Var	10x5	10x5	
	4000	EM	Y	Hyd	Y	N	48 1/2	N	24	30	30	2	40	83	N	116	N	170 1/2	79	800	3.5	25	Var	10x5	10x5	
	4100	EM	Y	Hyd	Y	N	48 1/2	N	24	30	30	2	40	83	N	116	N	170 1/2	79	800	3.5	25	Var	10x5	10x5	
	4200	EM	Y	Hyd	Y	N	48 1/2	N	24	30	30	2	40	83	N	116	N	170 1/2	79	800	3.5	25	Var	10x5	10x5	
	4300	EM	Y	Hyd	Y	N	48 1/2	N	24	30	30	2	40	83	N	116	N	170 1/2	79	800	3.5	25	Var	10x5	10x5	
	4400	EM	Y	Hyd	Y	N	48 1/2	N	24	30	30	2	40	83	N	116	N	170 1/2	79	800	3.5	25	Var	10x5	10x5	
Silent Hoist	9500	GE	Y	Hyd	Y	N	48 1/2	N	24	30	30	2	40	83	N	116	N	170 1/2	79	800	3.5	25	Var	10x5	10x5	
	9600	GE	Y	Hyd	Y	N	48 1/2	N	24	30	30	2	40	83	N	116	N	170 1/2	79	800	3.5	25	Var	10x5	10x5	
	9700	GE	Y	Hyd	Y	N	48 1/2	N	24	30	30	2	40	83	N	116	N	170 1/2	79	800	3.5	25	Var	10x5	10x5	
	9800	GE	Y	Hyd	Y	N	48 1/2	N	24	30	30	2	40	83	N	116	N	170 1/2	79	800	3.5	25	Var	10x5	10x5	
	9900	GE	Y	Hyd	Y	N	48 1/2	N	24	30	30	2	40	83	N	116	N	170 1/2	79	800	3.5	25	Var	10x5	10x5	
	10000	GE	Y	Hyd	Y	N	48 1/2	N	24	30	30	2	40	83	N	116	N	170 1/2	79	800	3.5	25	Var	10x5	10x5	
	10100	GE	Y	Hyd	Y	N	48 1/2	N	24	30	30	2	40	83	N	116	N	170 1/2	79	800	3.5	25	Var	10x5	10x5	
	10200	GE	Y	Hyd	Y	N	48 1/2	N	24	30	30	2	40	83	N	116	N	170 1/2	79	800	3.5	25	Var	10x5	10x5	
	10300	GE	Y	Hyd	Y	N	48 1/2	N	24	30	30	2	40	83	N	116	N	170 1/2	79	800	3.5	25	Var	10x5	10x5	
	10400	GE	Y	Hyd	Y	N	48 1/2	N	24	30	30	2	40	83	N	116	N	170 1/2	79	800	3.5	25	Var	10x5	10x5	
Towmotor	1500	GL	Y	Hyd	Y	N	48 1/2	N	24	30	30	2	40	83	N	116	N	170 1/2	79	800	3.5	25	Var	10x5	10x5	
	1600	GL	Y	Hyd	Y	N	48 1/2	N	24	30	30	2	40	83	N	116	N	170 1/2	79	800	3.5	25	Var	10x5	10x5	
	1700	GL	Y	Hyd	Y	N	48 1/2	N	24	30	30	2	40	83	N	116	N	170 1/2	79	800	3.5	25	Var	10x5	10x5	
	1800	GL	Y	Hyd	Y	N	48 1/2	N	24	30	30	2	40	83	N	116	N	170 1/2	79	800	3.5	25	Var	10x5	10x5	
	1900	GL	Y	Hyd	Y	N	48 1/2	N	24	30	30	2	40	83	N	116	N	170 1/2	79	800	3.5	25	Var	10x5	10x5	
	2000	GL	Y	Hyd	Y	N	48 1/2	N	24	30	30	2	40	83	N	116	N	170 1/2	79	800	3.5	25	Var	10x5	10x5	
	2100	GL	Y	Hyd	Y	N	48 1/2	N	24	30	30	2	40	83	N	116	N	170 1/2	79	800	3.5	25	Var	10x5	10x5	
	2200	GL	Y	Hyd	Y	N	48 1/2	N	24	30	30	2	40	83	N	116	N	170 1/2	79	800	3.5	25	Var	10x5	10x5	
	2300	GL	Y	Hyd	Y	N	48 1/2	N	24	30	30	2	40	83	N	116	N	170 1/2	79	800	3.5	25	Var	10x5	10x5	
	2400	GL	Y	Hyd	Y	N	48 1/2	N	24	30	30	2	40	83	N	116	N	170 1/2	79	800	3.5	25	Var	10x5	10x5	

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# POWERED HIGH-LIFT FORK OR PLATFORM TRUCKS (CONTINUED)

MAKE AND MODEL	Service Weight (Lb.) — Excluding Battery	Maximum Load Capacity (Lb.)	Operator—Sts, Stands, Walks	POWER TYPE	MAST		OVERALL DIMENSIONS										TURNING RADIUS With 40" x 48" Pallet		BATTERY		SPEEDS With Capacity Load		TYRE SIZES				
					Tilt	Telescopic	Wheelbase (In.)	Face of Forks to Centerline of Front Axle (In.)	Load Center (In.)	Length		Under-clearance	Height (In.)				Outside (Tailswing) (In.)	Inside (In.)	Intersecting Aisle Width (In.)	Minimum Aisle for Right Angle Stacking (In.)	Normal Voltage	Amperes Hours	Forward (Mph.)	Hoisting (Fpm.)	Lowering (Fpm.)	Drive Wheels	Steering Wheels
										Standard Fork (In.)	Less Forks (In.)		Minimum	Maximum	Minimum	Maximum											
Yale & Towne—Cont.																											
K25-8	4735	8000	IS	EM	Ch	Y	N	64	30	30	31	62	65	83	113	105	46	71	157	12	450	5.5	14	25	20x8x16	10x5	
M4HL7	1780	4000	PH	EM	Hyd	N	N	44	30	30	11	11	65	83	83	83	83	83	83	12	450	2.0	6	Reg	10x5	10x5	
M4HL11	1780	4000	PH	EM	Hyd	N	N	44	30	30	11	11	65	83	83	83	83	83	83	12	450	2.0	6	Reg	10x5	10x5	
M4HL11	1780	4000	PH	EM	Hyd	N	N	44	30	30	11	11	65	83	83	83	83	83	83	12	450	2.0	6	Reg	10x5	10x5	
M40HLT	3000	2875	W PH	EM	Hyd	N	N	44	30	30	11	11	65	83	83	83	83	83	83	12	450	2.0	6	Reg	10x5	10x5	
M40HLT	4000	3025	W PH	EM	Hyd	N	N	44	30	30	11	11	65	83	83	83	83	83	83	12	450	2.0	6	Reg	10x5	10x5	
IG2-3024	2000	4125	S	S	FL	GL	Hyd	12 1/2	24 1/2	73 1/2	30	4 1/2	2 1/2	60	105	84	90	165	144	165	88 1/2	7.0	50	75	18 1/2x11 1/4	14x4 1/2	
IG2-3024	3000	4735	S	S	FL	GL	Hyd	13	24 1/2	73 1/2	30	5 1/2	2 1/2	60	105	84	90	165	144	165	88 1/2	7.0	50	75	18 1/2x12 1/2	14x4 1/2	
IG2-4015	4000	4735	S	S	FL	GL	Hyd	13	24 1/2	73 1/2	30	5 1/2	2 1/2	60	105	84	90	165	144	165	88 1/2	7.0	50	75	18 1/2x12 1/2	14x4 1/2	
IG2-4015	2000	3555	S	S	FL	GL	Hyd	13	24 1/2	73 1/2	30	5 1/2	2 1/2	60	105	84	90	165	144	165	88 1/2	7.0	50	75	18 1/2x12 1/2	14x4 1/2	
IG2-4015	2000	3555	S	S	FL	GL	Hyd	13	24 1/2	73 1/2	30	5 1/2	2 1/2	60	105	84	90	165	144	165	88 1/2	7.0	50	75	18 1/2x12 1/2	14x4 1/2	
IG2-4015	2000	3555	S	S	FL	GL	Hyd	13	24 1/2	73 1/2	30	5 1/2	2 1/2	60	105	84	90	165	144	165	88 1/2	7.0	50	75	18 1/2x12 1/2	14x4 1/2	
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IG2-4015	2000	3555	S																								



# POWERED END-LOADING (STRADDLE) CARRIERS

MAKE AND MODEL	Maximum Load Cap. (lb.)	Load Space (In.)		Package Size (In.)		Service Weight (lb.)	Power Type	Hoist Mechanism	Overall Dimensions (In.)			Wheels			Turning Radius (In.)				Load Shoes				Engine	Transmission	Running Speeds (mph)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
		Inside Height	Inside Width	Width	Height				Length	Steering Wheel	Width	Frame Length (In.)	Wheel Base (In.)	Number Steering	Number Driving	Tire Sizes		Without Load		With Frame-Load		Length (In.)				Width of Face (In.)	Maximum Lift (from Ground)	Shoes Swing	Bolster Width (Bolster Truck)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
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**Baker**—Baker Industrial Trucks, P. O. Box 5579, Cleveland 2, Ohio

**Barrett - Cravens**—Barrett - Cravens Co., 630 Dundee Rd., Northbrook, Ill.

**Champ**—Champ Sales Corp., 2500 N. Rosemead Blvd., El Monte, Calif.

**Clark**—Clark Equipment Co., Industrial Truck Div., 24th St., Battle Creek 85, Mich.

**Clark-Ross**—See Clark Equipment Co.

**Elwell-Parker**—The Elwell-Parker Electric Co., 4205 St. Clair Ave., Cleveland 3, Ohio

**Erickson**—Erickson Power Lift Trucks, Inc., St. Anthony Blvd. & University Ave., N.E., Minneapolis 18, Minn.

**Ford**—Tractor and Implement Div., Ford Motor Co., Birmingham, Mich.

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**Harlo**—Harlo Products Corp., 4210 Ferry St., S.W., Grandville, Mich.

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**Lift Trucks**—Lift Trucks, Inc., 2425 Spring Grove Ave., Cincinnati 14, Ohio

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**Mobilift**—Mobilift Materials Handling Equipment Div., Motec Industries, Inc., Hopkins, Minn.

**Moto-Truc**—The Motor Truc Co., 1953 E. 59th St., Cleveland 3, Ohio

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**Ottawa**—Equipment Div., Young Spring & Wire Corp., Bowling Green, Ohio

**Pettibone**—Subsidiary, Pettibone-Mulliken, 4600 W. Division St., Chicago 51, Ill.

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**Pettibone-Mulliken**—Pettibone-Mulliken, 4600 W. Division St., Chicago 51, Ill.

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**Ross**—See Clark Equipment Co.

**Scott**—James Campbell Smith, Inc., 4057 Erie St., Willoughby, Ohio

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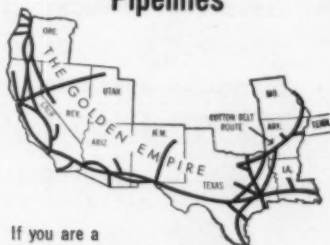
**Truck-Man**—Truck-Man Div., The Knickerbocker Co., 603 Liberty St., Jackson, Mich.

**Wright-Hibbard**—Wright-Hibbard Industrial Truck Co., Div. of Jonard Industries, Inc., P. O. Box 227, Hamburg, Pa.

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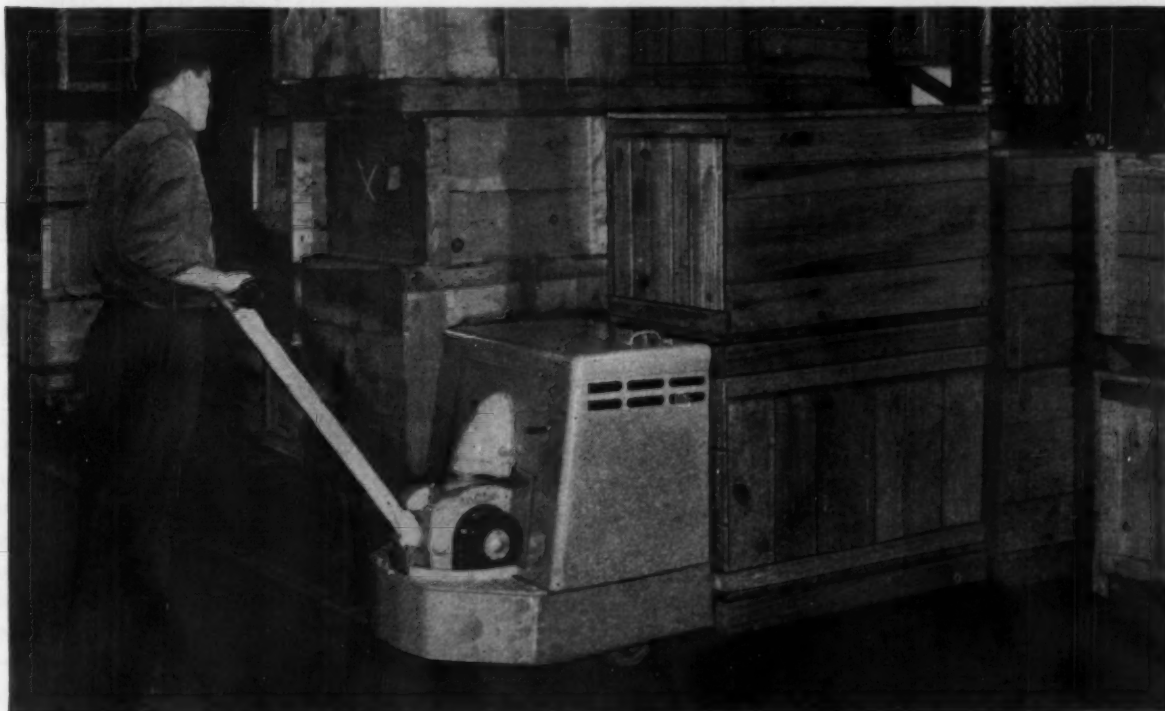


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This is not a reckless offer. Exide knows from countless actual performance records that these batteries readily give this kind of life. Many Exide nickel-iron-alkaline batteries have been used in walkie-truck service for upwards of 20 years and are still going strong. So the plain fact is that we are simply giving you positive assurance of battery value that is already there anyway.

Long life is one of the characteristics of Exide nickel-iron-alkaline batteries. They have other unique advantages too. They are lighter in weight than other batteries. They give off no corrosive fumes during use or while charging. And they can be stored indefinitely without injury. This is of special value during seasonal shutdowns or other inactive periods. All you do is discharge the battery, short-circuit the terminals and store in a clean, dry place.

Of course, for any type electric industrial truck—walkie, rider, or narrow-aisle—the maximum power economy depends on three factors: the right battery for the job, a charger to match, and needed service. This combination is the Exide Power Package.

Your Exide representative studies your requirements, then recommends the battery best for your needs from the broad Exide line. He is completely objective in determining your needs because Exide offers all types: Exide-Ironclad with tubular positive plates, Exide-Powerclad premium flat-plate, and Exide nickel-iron-alkaline. Exide chargers are available in both motor-generator and silicon rectifier types and in sizes to cover all needs. Exide service men are coast to coast, all factory trained on batteries and chargers.

The Exide Power Package is your easiest way to get not only maximum battery life in your applications, but maximum battery economy year after year. Write for details. Exide Industrial Marketing Division, The Electric Storage Battery Company, Philadelphia 20, Pa.

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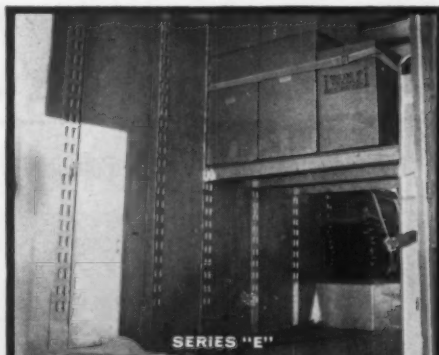
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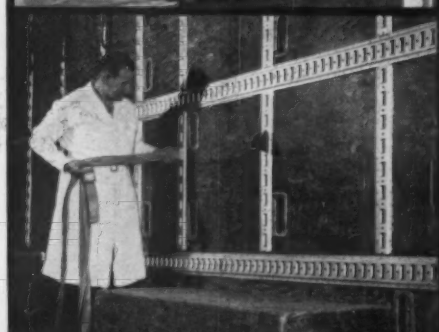
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**SERIES "E"**



**SERIES "E" RETROFIT**



**SERIES "F"**



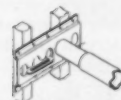
**SERIES "E" Cargo Control System**

Flush-mounted, factory-installed vertical and/or horizontal punched steel track to which straps and/or 2x4 sockets attach. Fittings insert at 2" intervals in horizontal track, 4" intervals in vertical. Fast-action buckles pull up nylon straps snug and secure. 2x4 wood beam decking socket supports 1000 pounds.



**SERIES "E" RETROFIT Cargo Control System**

Same as Series "E" System, except designed for field-installation in less than six man-hours and without special tools. Horizontal Retrofit track, which attaches anywhere on truck or trailer wall with simple wood screws, also strengthens wall and acts as rub rail to protect plywood lining.



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A load-control system using round shoring bars with spring-loaded ends that snap into and out of track openings on 1 1/2" centers. Bars and straps can be used in combination. Bars can secure partitions . . . support decking . . . keep rear overhead doors free for opening, closing . . . protect cargo and speed handling.

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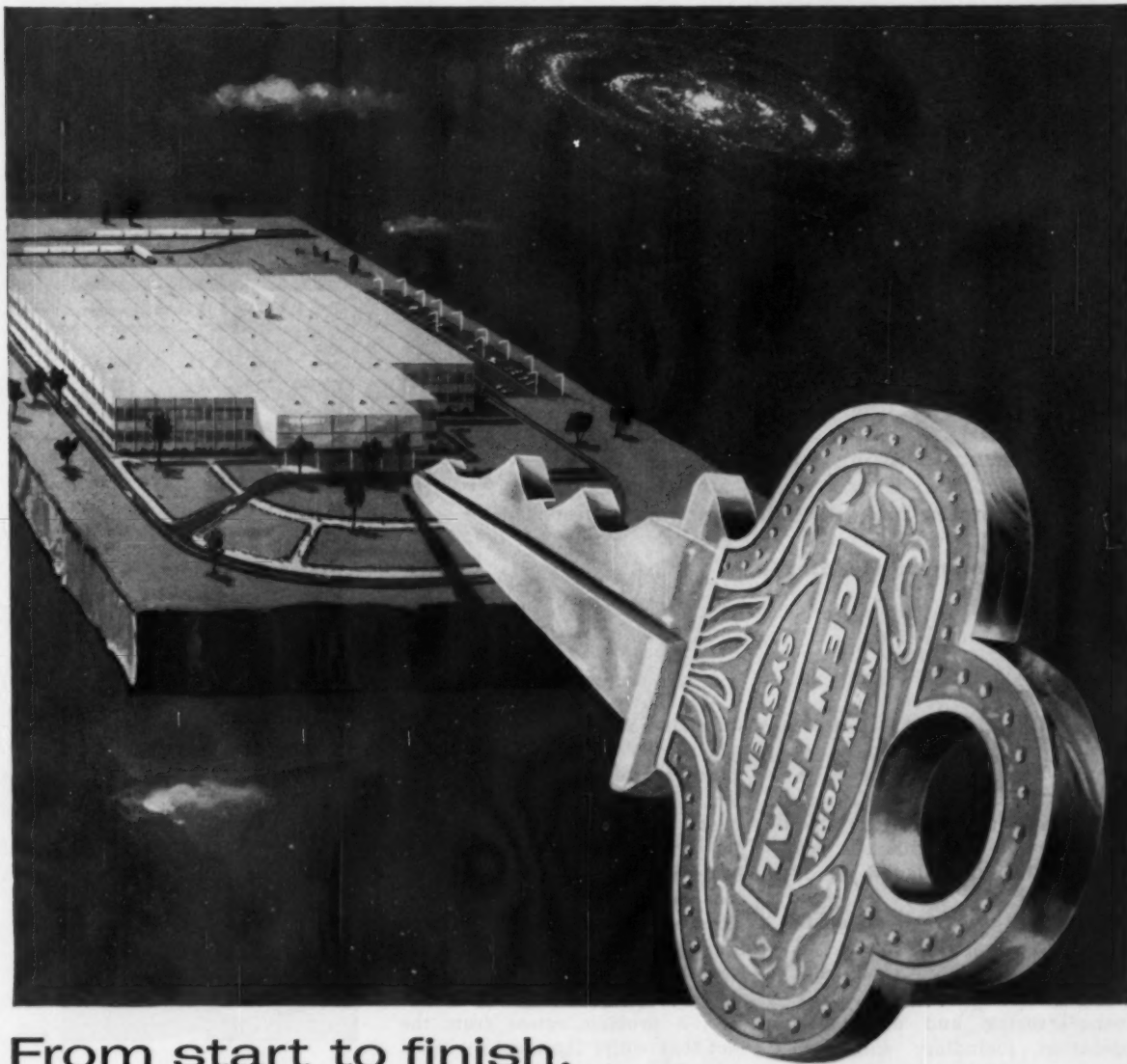
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# IDP shakes cobwebs out of distribution network

**Data processing is helping this company plan distribution and achieve economical freight rates**

**I**NSSTALLATION of an electronic data processing system has enabled a west coast company to centralize control of plant and warehouse facilities which ship close to \$80 million a year worth of household laundry products.

In effect, the single computer installation at Purex Corp., Ltd., in South Gate, Calif., a suburb of Los Angeles, optimizes the entire manufacturing and distribution operation, including: daily production schedules for 17 manufacturing plants, daily shipping schedules to 67 warehouses, traffic and freight operations for the entire network.

## **Helps Optimize**

Ultimately, this program helps optimize shelf positions in stores and supermarkets by insuring that shipments arrive on time.

In the highly competitive cleaning products industry, there is a continuing struggle for the grocer's valuable shelf space. If brand "A" is sold off the shelf, and the grocer has no replacement in his stockroom, he will restock "A" space with a competitive product and "A" may never be able to regain the space. We must maintain an adequate stock at all our

warehouses at all times to fill customer orders.

Adding to the problem is the fact that the rapid growth of Purex has created a distribution network of extreme complexity. Purex manufactures more than 75 consumer products. Some are distributed under more than one brand name. Others are specialty items manufactured for seasonal shopping periods such as Christmas. A problem arises from the fact that while the company sells only Purex products, not all of the company's products are made in all our plants.

## **Spiderweb**

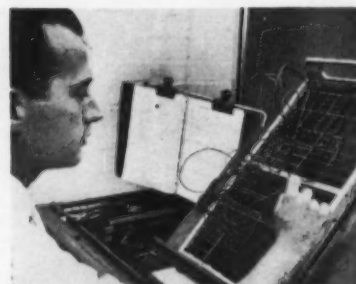
This has created a spiderweb distribution network in which merchandise is moved in bulk across long distances from 17 manufacturing points to 67 distribution points, so all warehouses have a sufficiently large stock of products to meet customer demand.

Distribution must be planned to achieve the most economical freight rates for the product involved. It is uneconomical, for instance, to ship bleach, which is priced at 4 cents a lb, more than 400 miles.

The situation is further complicated by a diversified pricing



**IBM RAMAC 305 data processing system centralizes operation's control**



**Programming is automatic, produces shipping schedules. Setup is wired**

**Invoices from orders are sent to processing center daily and carded**



arrangement which enables customers to obtain lower prices through ordering combinations of products in bulk. For instance, to obtain the best price on his merchandise, one customer may order bulk quantities of Trend, (manufactured in St. Louis), Dutch Cleanser (Chicago), and Sweetheart Soap (Omaha). These products are to be delivered to the customer in one shipment.

To maintain adequate control over this distribution network, and the production schedules created by distribution demands, Purex installed a data processing system. This computer maintains complete control over the manufacturing cycle from the purchase of the

*(Please Turn to Page 68)*



## DIAGNOSIS: SEVERE COMMUNICATIONS BREAKDOWN CURE: AMERICAN AIRLINES AIRFREIGHT

From the first phone contact to dock delivery, American smooths the communications path. How? . . . (1) advance planning of available lift capacity (2) flexible local routing and control to meet daily shipper requirements (3) a nation-wide private line communications network second to none in size and versatility (4) a staff of telephone sales agents keyed to your requirements. In every step, American has the answer to your goods-in-transit problems.

When you ship by American AIRfreight, you have the assurance your goods are moving on predetermined routing. Should questions arise, you'll talk to the friendly, knowledgeable voice of American and get up-to-the-minute answers. Guesswork's gone. Tighter production

and delivery schedules can be set and met, thanks to American's speed and dependability.

Service like this is why more shippers ship more freight on American than any other airline in America. With 1200 flights daily, American's fleet of AIRfreighters, Astrojets,\* and other combination lift planes gives same day or overnight service to more than 50 major markets. And the world's most experienced AIRfreight specialists guarantee your cargo expert handling. *Ship with the professionals—call American AIRfreight.*

### AMERICAN AIRLINES

*America's Leading Cargo Airline*

\*Service mark of American Airlines, Inc.



# IDP shakes . . .

(Continued from Page 66)

raw material to shipment of finished product.

The equipment includes a 50 disk "memory" unit with a capacity of 5,000,000 alphanumeric characters of data. The entire general ledger, for example, is held in the "memory" for accounting purposes. The system can produce an item of requested information in less than a second and is able to complete all the computations necessary to obtain monthly production and shipping schedules in only six hours, leaving the rest of the working month open for other data processing applications.

## Can Modify

In addition, changes in company operating procedures are readily absorbed by the computer. Management can modify the existing programs within the computer at will, adding new plans and exceptions as needed. These are fed into the system to correct the existing plan. Management plays a key part in plans formulation, but the heavy burden of detail work is performed by the computer.

Operating completely on probability, the computer draws a complete monthly sales forecast at the beginning of each month. From this sales forecast, the computer establishes complete day-by-day production schedules for each plant (covering all facets of the operation, including facility availability and raw material requirements) and an optimum shipping schedule which directs the flow of material from plants to warehouses. A centralized control has been set up to make sure the company is not tying up capital in unnecessarily high inventories, or endangering our market position with short supplies.

Here's how the system works:

Invoices from customer orders are sent to the Purex data processing center in South Gate each day. Data from these orders is then transcribed into punched card form. The cards are read into the computer's memory. The computer

updates all sales and inventory information daily and at the end of the month a complete sales report is produced.

This computer-generated sales report now becomes the input for the automatic management operating system. Monthly sales and inventory reports are fed back into the computer which contains, in the disk memory unit, the sales reports of the preceding six months. From these figures, the computer automatically arrives at a monthly sales forecast. The forecast is based on six months sensitivity, and shows probable sales together with maximum and minimum protection figures.

## Forecasts

Actually, the computer creates two sales forecasts. It produces a preliminary forecast two months in advance which is studied by management. The figures in this report are revised in terms of management objectives and the new information is entered into the computer "memory." Then on the basis of the adjusted figures, the computer produces the actual sales forecast. This is the complete, detailed, day-by-day forecast.

Once the final forecast is obtained, the device automatically computes all the information necessary to produce the shipping and production schedules. The computer analyzes each product in each warehouse and, considering the inventory on hand, and the protective levels, determines how much material must be sent by weight and volume to fill the anticipated sales requirements.

The computer determines how many shipments must be made to fill warehouse requirements and sets the first shipping date.

With shipping requirements established, the system analyzes plant facilities and sets up production schedules, showing daily raw material usage and requirements.

## Accounting Machine

These calculations are complete-



Punched cards are sorted before they are entered in the memory unit



Facts on cards enter memory. General ledger is in data processor

Cards are fed into accounting machine, converts results into reports



ly automatic, accomplished by a program established by a Purex mathematician. They are completed by the system within a six-hour period. The results emerge from the machine in punched card form, and are translated into printed form by an accounting machine.

The printed reports show sales forecasts, production schedules and shipping schedules. The reports are sent to the Purex planning section, which distributes them to the proper authorities—the shipping schedules to the respective plants, the raw material requirements to purchasing, etc.

The use of this system makes possible optimization of the complete planning and production

(Please Turn to page 80)

# NEED A TRUCK... NEED IT FAST?



need a van, panel, pick-up, walk-in . . . and need it fast?

Hertz specializes in getting you the truck you want—and getting it to you fast! You get new Chevrolet, GMC or other famous make trucks. And you can choose from a wide variety of types—van, stake, panel, pick-up or walk-in. Tractors and trailers are also available in many cities. All you need is proper driver's license and identification. And Hertz low rates include insurance, gas and oil, even if bought on the road.

Play it smart! Don't tie up needed cash in "stand-by" trucks that are used only as replacements or during

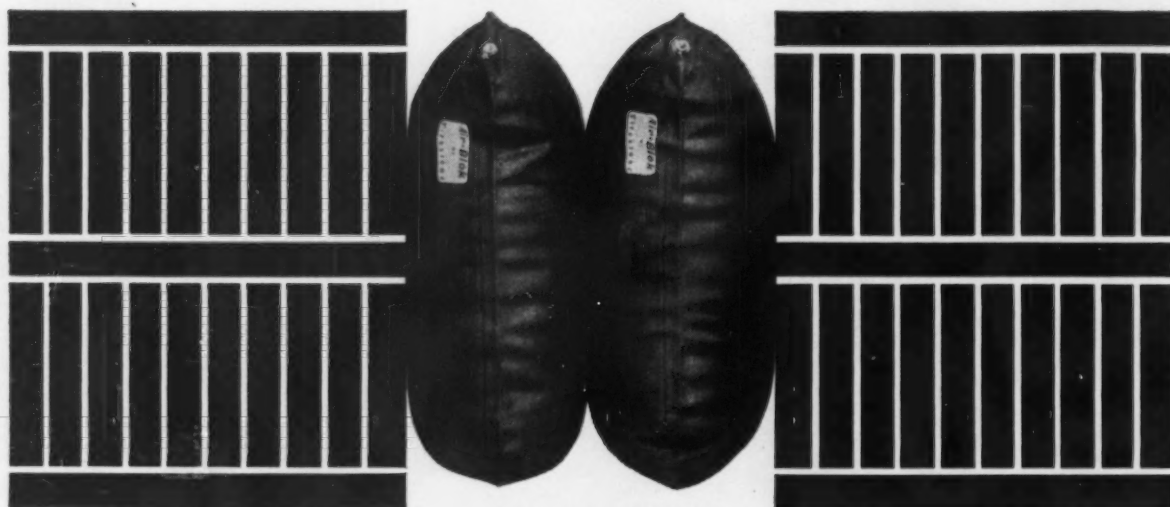
peak periods. Rent trucks from Hertz *when* you need them—and conserve your capital! Trucks are available by the hour, day or week. Also available on long-term leasing basis for economical year-round operation.

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# FIRESTONE AIR-BLOK

## PNEUMATIC DUNNAGE



### ENDS SHIPPING DAMAGE AND DUNNAGE WASTE!

Air-Blok, Firestone's pneumatic dunnage cushion, assures damage-free deliveries, shipment after shipment. You buy it only once. From then on, cargo bracing is a low-cost, one-man job.

One workman can quickly block lading by inflating Air-Bloks in place. These tough, rubberized nylon cushions, made according to the new improved Firestone design, take up slack, tighten the load and offer shock-absorbing security against shipping damage.

At each trip's end, Air-Blok deflates to speed return of dunnage and eliminate demurrage charges. The cushions return for re-use and cancel costs of short-lived, conventional dunnage.\* Dunnage savings up to 50% are reported by shippers.

For full Air-Blok information, contact Firestone Industrial Products Company, Dept. 60-2, Noblesville, Indiana.

\*Free return in following territories: Within: Official, Southern, Southwest; between: Southern and Official, IFA and Southern, Official and Southwestern, Southwestern and Southern. Applications for other territories are pending.

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# Firestone

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Air-Blok is easy-in, easy-out dunnage; one man can block entire car swiftly.



Air-Bloks are quickly deflated, rolled and tied with built-in straps for easy return.





*IT HAS JUST LEFT  
CINCINNATI FOR  
NEW ORLEANS WITH  
INTERMEDIATE  
STOPS*



This is a car in the train. Data on the punched paper tape about car number, contents, shipper, destination, and consignee will be put on magnetic tape at L & N headquarters; then "translated" by high-speed printer into legible English. Result: L & N always knows where a shipment is . . . when it is scheduled to arrive.

### Millions for modern communications!

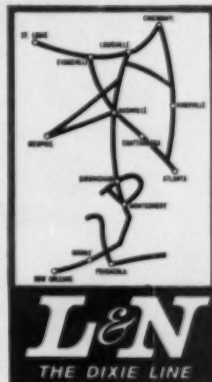
Tape recorder, electronic computer, teletype, telephone, telegraph — all share in L & N's advanced communications network, costing many million dollars, and enabling L & N to pinpoint any freight car at any time, whether en route or at terminal.

Prompt information for shippers is one benefit of L & N's fast, sure communication system. Another advantage is increased efficiency at terminals, where train consists arrive well ahead in teletyped form, indicating how cars are blocked, or grouped, for their destinations.

One of the nation's great railroads, L & N offers you up-to-the-minute transportation to, from, and

through the Central South, with 5,700 miles of main track, and 60,000 cars, a fleet which is among the five largest in the country. Equally important, L & N stays modern by continuing to invest in progress, with \$47.5 million put into new cars and terminal equipment in 1960, and an additional \$48 million being spent in 1961.

Ship L & N for operating know-how that means dependability, for modern facilities that give the shipper speed with safety! Contact *Freight Traffic Department, Louisville and Nashville Railroad, Louisville 1, Kentucky (JUniper 7-1121)*.



**LOUISVILLE AND NASHVILLE RAILROAD**

## **Flexible containers towed in sea trials**

**Flexible container filled with hydrocarbons  
makes successful trip across the North Sea**

*By John Grindrod, European Correspondent*

**T**HE HEAVY Organic Chemicals Division of Imperial Chemical Industrial Ltd. and Dracone Developments Ltd. have successfully tested in deep-seas a Dracona flexible towed container.

The trial was a North Sea crossing between Billingham, England, and Flushing, Holland. Conceived as a possible means of increasing oil payloads on the long haul around the Cape from the Middle East, the idea of towing bulk liquid

cargoes in sausage-like, floating containers originated during the Suez crisis. Trials of prototype containers had been carried out in coastal waters. The stage had been reached where it was desirable to carry out a full-scale trial, transporting a cargo under commercial conditions to an export destination.

Many of the petroleum chemicals which the Heavy Organic Chemicals Division manufactures and exports in large-tonnage ship-

ments are lighter-than-water. For instance, plasticizer alcohols, such as iso-octanol, and solvents, including acetone, isopropyl alcohol and isobutyl alcohol.

Constantly seeking more economical methods of distribution, the Division therefore arranged to ship the trial cargo of liquid hydrocarbons.

Dracone D.4, which has a carrying capacity of 40 tons, was selected for the job. The skin, about 0.15 in. thick, is of woven nylon fabric, proofed inside with oil-resistant acrylonitrile-butadiene rubber and outside with neoprene, which is highly resistant to abrasion and weathering. The combination is extremely strong.

Loading was from road tankers at the I.C.I. wharf at Billingham. "Dracone D.4" was unwound from the reel on which it had been transported to Billingham by truck. It was filled through a pipe connection as it lay on the water.

Towed by the ocean-going tug "Fiery Cross" of Middlesbrough, Dracone D.4 sailed for Flushing. The 260-nautical mile voyage was completed at an average speed of 6.8 knots.

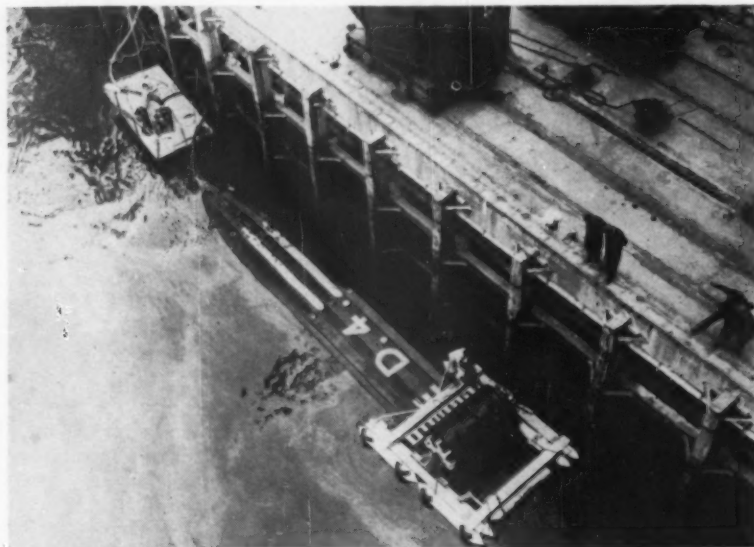
So that I.C.I.'s shipping and technical experts could examine all phases of the handling, unloading was not carried out at Flushing. Instead Dracone D.4 was returned to Billingham to discharge her cargo into rail tankers.

The Tess Towing Co., owners of "Fiery Cross," reported that, although the tug experienced a good deal of rough water, there were no serious problems. The tow-rope loading was far less than they had expected. The Dracone towed throughout in a perfectly docile manner, without yawing or snatching.

Lt. Col. H. G. Hasler, operations manager of Dracone Developments Ltd., commented that most of the problems are licked now.

Transportation of chemical cargoes in these containers appears, therefore, to be practicable. It should be possible for a normal cargo vessel to take the containers in tow without materially increasing fuel costs, or reducing speed or conventional payload. ●

**Dracone D.4 being emptied and reeled after its return to wharf at Billingham, England. Flexible vessel made successful trial run to Flushing, Holland**



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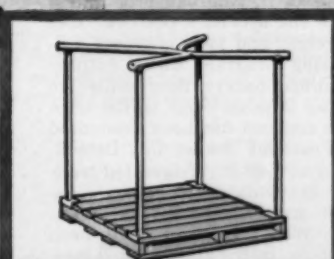
## **With TIER-RACK Frames... No Nuts, Bolts or Fixtures!**

Almost as fast as you can say "warehouse portability," two interchangeable tubular steel frames snap onto your regular warehouse pallet, creating a lightweight, portable rack that supports thousands of pounds.

Two curved pins lock the frames rigidly at the top. In seconds, you have a portable rack... without special parts or attachments of any kind.

These portable Tier-Racks enable you to operate with fewer aisles, use all your "air space," and alter your layout as fast as warehouse conditions change.

See how you can gain more storage space in your present warehouse... plus portability, too.



**TIER-RACK CORPORATION**

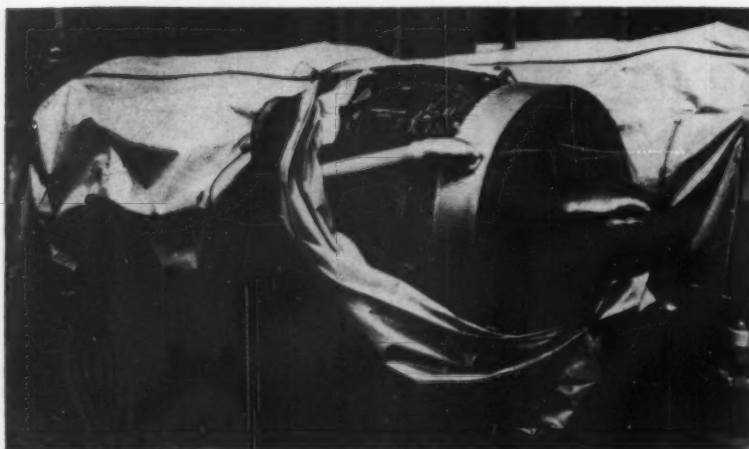
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## Chuting the News . . .

(Continued from Page 10)

### News Briefs

H. R. Cump, president of the Canadian Pacific Railroad, testifying in a hearing before the Presidential Commission on Railroad Work Rules, reported that operation in Canada of diesel locomotives without firemen has been completely satisfactory from every standpoint. He appeared in support of a U. S. Railroad proposal to eliminate the firemen's position from diesel freight and yard engines.

A leasing program which entitled any qualified bakery flour miller to operate an Airlide flour trailer on a five-year contract has been announced by the Fruehauf Trailer Co., Detroit.

Twenty new 40-ft refrigerated trailers, ten heavy-duty solid-side, open-top 40-ft trailers, and fifteen diesel-powered White tractors have been delivered to Interstate Motor Lines, Inc.

T.O.F.C., Inc., combining truck-rail facilities, has been organized to finance, construct and operate piggy-back or trailer-on-flat-car loading and unloading terminals. Fifty per cent of the company is owned equally by six of the larger motor carriers in the U. S.—Cooper-Jarrett, Inc., Chicago; Denver-Chicago Trucking Co., Denver; Eastern Express, Inc., Terre Haute, Ind.; Midwest Emery Freight System, Inc., Chicago; Interstate System, Grand Rapids; and Spector Freight System, Inc., Chicago; and fifty per cent by The Rail-Trailer Co., Chicago. The Erie-Lackawanna Railroad has joined with T.O.F.C.

Ringsby Truck Lines, Inc., with the approval of the ICC, has completed the purchase of Arizona-Pacific Tank Lines, a California-based bulk commodity hauler.

Plans for a 647-mile addition to its microwave radio facilities were announced by Union Pacific Railroad. The road now uses microwave radio in its communications system between Omaha, Nebr., and Laramie, Wyo. It will be extended to Salt Lake City. Another installation will be between Portland and Hinkle, Ore.

The Alaska Steamship Co. container service has been expanded to include another steamship, the Fortuna. After a \$100,000 "containerization" face-lifting, it joined the Chena, Nadina, and Iliaman in providing bi-weekly sailings from Seattle for Seward, Anchorage, and Fairbanks.

The New York Central System has completed a \$4.5 million modernization program at its West 60th St. freight yard.

### Flexible Plastic Containers

Zippered and flexible plastic containers can hold a vacuum or pressurization. Cost of storing Rolls-Royce engines is cut by this method. Driclad, an English invention, is marketed by Navan Products, Inc. The containers are fabricated from different barrier materials according to the degree of vapor-proofing required.

### NITL Calls for Caution

The National Industrial Traffic League has urged reasonable safeguards at dual rates hearings before the Special Subcommittee on Steamship Conferences. Grant Arnold, chairman of the League's Special Committee on Study of the Shipping Act of 1916, told the Subcommittee that the League generally believes the H.R. 4299 provides a framework for a conference method of determining and publishing ocean rates and a contract system of dual rates, with safeguards for the shipping public. He said some amendments are required.

### ARBWA Elects New Officers

New president of the American Red Ball Warehousemen's Association is Donald R. Miller, president of Dayton Transfer Co., Dayton, Ohio. Other officers elected by the directors are Buford Owen, president, I. C. Deere Transfer and Storage Co., Dallas, vice president; William Miller, president, Anderson Brothers, Chicago, secretary; and Charles Valla, president, Santini Van Co., New York, treasurer.

(Please Turn to Page 76)

### Mover Executives Lauded



Moving and storage company executives are awarded citations for 1960 Aero Mayflower Transit Co. sales records. Placing in top 10 among 670 agents were (l. to r.) Arthur C. Smith, Jr., Washington, D. C.; Jack C. Robbins, Denver; Robert L. Dunne, Boston; Sidney Wald, Houston; Virgil Sloan, St. Louis; A. H. Naish and Alex S. Naish, Cincinnati; W. N. McKinney, Dallas; Paul C. Moeller, Detroit; and W. Neil Conatser, Cleveland. Citations were presented by Aero Mayflower president, John Sloan Smith in background.



Research-oriented, quality-conscious and profit-minded, Quality Carriers, Inc., Burlington, Wis., considers Macks an all-important part of both its liquid-foodstuff hauling fleet (shown here) and its petroleum and chemical transporting affiliate, Bulk Transport. Quality just recently opened its new Chicago terminal . . . and has inaugurated a new method of handling dry bulk commodities in pressure vessels unloaded by air.

*Burlington, Wisconsin, carrier stresses*

## QUALITY in name..service..and equipment

In 1939 Lee Barney and Pat Torhorst were a couple of aggressive young men with a one-truck garage, lots of ambition and a dedication to give their customers the best job they knew how. Today, as QUALITY CARRIERS, INC., over 200 stainless steel tank trucks bearing the Quality name operate from a network of terminals to every corner of the U.S. east of the Rockies.

Lee Barney and Pat Torhorst have built Quality Carriers, Inc., into one of the finest liquid and dry bulk operations in the country. They did it through use of modern methods and equipment . . .

and an insistence on living up to the name QUALITY in every phase of their far-flung operation.

Herman Pearce, Vice President and General Traffic Manager, puts it this way. "You don't try to cut corners on quality when your operation depends on the performance of your equipment. We've got 105 Mack Thermodyne® diesel tractors in our fleet, and we're adding more all the time. If a better truck ever comes along we'll buy it—but as of now, Macks are doing the job the way we want it done."

Take a leaf from the book of a successful carrier like Quality and put Macks to

work hauling your perishable cargoes. For dependability and unmatched economy you can't surpass a Mack. The Mack branch or distributor nearest you will be glad to show you performance records of others who have found a profitable difference in Macks. Mack Trucks, Inc., Plainfield, New Jersey. Mack Trucks of Canada, Ltd., Toronto, Ontario. 0037

**MACK**  
FIRST NAME FOR  
**TRUCKS**



## Chuting the News . . .

(Continued from Page 10)

### Freedom for Railroads by Merger Seen by Rail President Saunders

Diversification, mergers, and technological advances were cited by a railroad president recently as developments which could free the transportation industry for a new and invigorating role in the national economy.

Stuart T. Saunders of the Norfolk and Western Railway, delivering the Annual Saltzberg Lecture at Syracuse University, told some 125 transportation specialists that the "merger movement must keep moving ahead. Mergers must not be stalled or delayed by the short-sighted opposition or rival railroad managements or unstatesmanlike opposition of railroad labor."

Saunders said that mergers will go "a long way toward eliminating the inadequately utilized facilities that drain away money and produce inefficiency."

### Movers Get New Techniques

New techniques in moving and storage were a main attraction of the recent American Red Ball Transit Co. Annual Convention. The meeting was held to instruct agents in new techniques through a series of seminars.

### ICC Decides "Sealdtank" Case

The Interstate Commerce Commission has decided that certain motor common carriers of general commodities, except commodities in bulk or those requiring special equipment, have the right to transport flowable, fungible commodities when tendered in collapsible and stackable containers. Tank truck carriers are authorized to transport such commodities when tendered into a premounted C&S container, whether supplied by the carrier or shipper.

### Hansen Elected President of ACW At Record Denver Meeting

T. L. Hansen is the new president of the American Chain of Warehouses, Inc. He is president of Hansen Storage Co., Milwaukee, Wis.

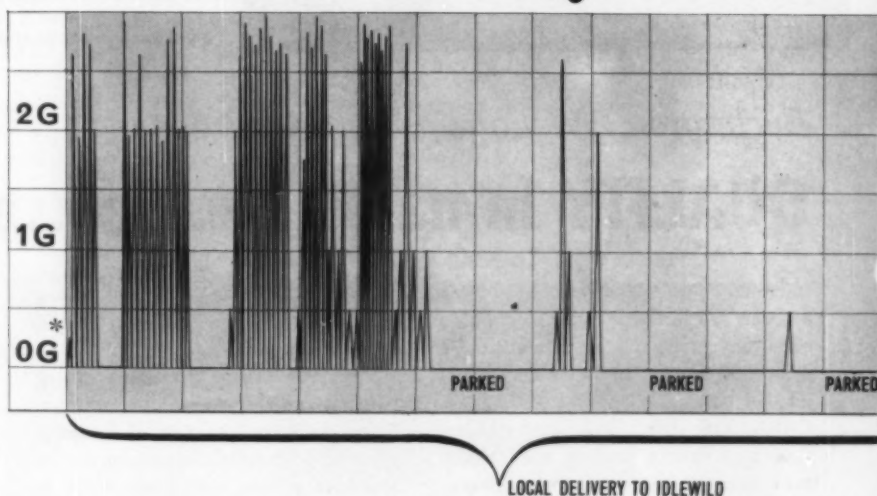
Other newly-elected officers include C. B. Payson, treasurer and general manager, Farnsworth Merchandise Storage Co., vice president; W. E. Seeley, general manager, Midland Warehouses, Inc., secretary-treasurer. John W. Terreforte was re-elected executive vice president.

### NVA Names New Directors

At the Annual Directors Meeting of National Van Lines, Inc., Frank L. McKee, Mrs. E. D. McKee, A. F. Schertzberg, Duane N. Quamme, Mrs. E. C. Burns, and E. J. Apcel were elected to the board of directors. Quamme was made vice president and Apcel was named treasurer. Mrs. Burns is treasurer.

# Electronic Stowaway Proves

*RCA's recording of a New Jersey-to-Sweden shipment tells the smooth "inside" story of Clipper Cargo handling*



What you see here is the story of the complete journey of a DC7F all-cargo Clipper† shipment from RCA in Gloucester, N. J. to a bank in Stockholm, Sweden.

Unknown to Pan Am, an impact recorder was "planted" within the shipment, registering every bump and vibration. That's what those jiggles are. This was the first

RCA 501 all-transistor computer system ever sent to Europe. Value: \$700,000. RCA wanted to be sure it was handled with care.

What's more, RCA wanted to prove that Clipper Cargo is a smooth, practical way of shipping. Their own recording showed it. As you can see, the all-cargo flight itself



## Trucking Firms to Get Boost From SBA's New Loan Rate

The comptroller of the American Trucking Associations, Inc., has pointed out that Small Business Administration funds borrowed by trucking firms will be used to revitalize their operations.

George H. Minnick said that the additional spending will automatically improve the unemployment situation in the depressed areas concerned. He emphasized that the SBA had cut much red tape with regional SBA offices making direct loans of up to \$50,000 to any one firm.

The previous limit was \$20,000. Trucking companies which gross less than \$4 million annually are eligible for the new rate.

## AWC Holds Annual Meeting

Affiliated Warehouse Companies, Inc., held its 8th Annual Meeting recently in Denver. The 1961 Membership Directory is now available.

## September Meeting for AST&T

The 16th Annual Meeting of the American Society for Traffic and Transportation will be held in Philadelphia, Sept. 6-7. A special commemorative seminar will be held at the University of Pennsylvania in honor of Dr. G. Lloyd Wilson.

*Europe will not accept the proposed container standard of 8-ft widths and 8-ft heights. This is the warning of John R. Immer, delegate for North America to the International Container Bureau. Opposition is based, in part, on a desire to limit road transportation as a way to reduce highway casualties.*

## ATC Updates Convention

The dates for the forthcoming Annual Meeting of the Associated Traffic Clubs of America were advanced one week. The new dates are Sept. 10 through 12. Change avoids conflict with a meeting of the National Defense Transportation Association.

## NRMA Traffic Group Names Vantine Chairman, Hears Speakers, Panels

Robert E. Vantine was appointed chairman of the Transportation Committee of the National Retail Merchants Association at the group's 40th Annual Conference.

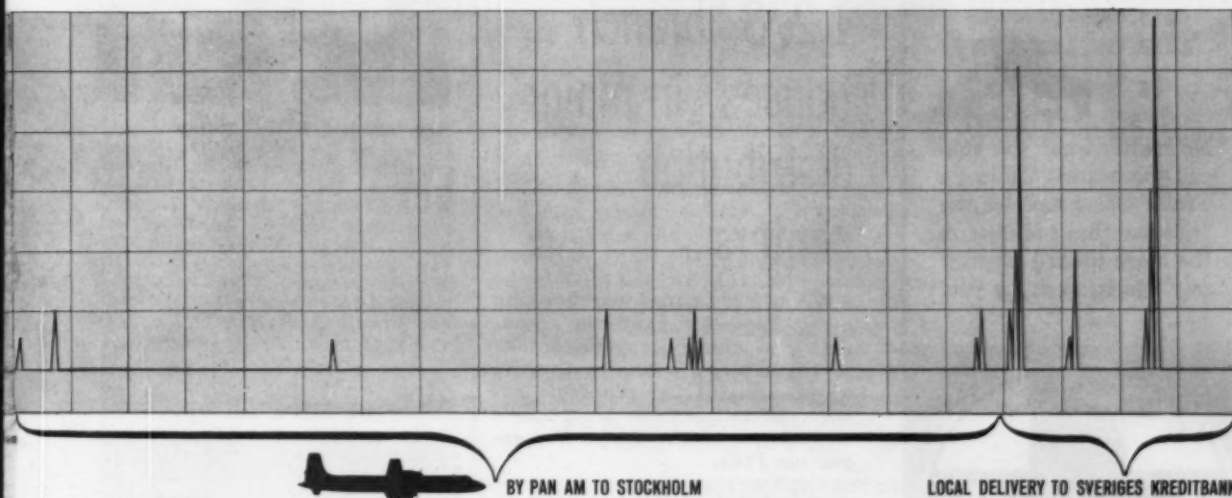
Vantine, traffic manager, Bloomingdale's, N. Y., has as vice chairman Myron Englisner, traffic manager, Allied Stores Corp., New York. The three-day meeting was filled with panels and other group-oriented discussion on profit making and saving techniques.

Among the papers delivered was one on warehousing by William Sweeney, Jordan Marsh Co., Boston. He recommended that his audience beware of elaborate permanent equipment installation. "Confine yourself to equipment on wheels, forks, wheel trucks, and dollies," he said.

Other speakers covered data processing, order checking problems, and minimum shipments.

(Resume Reading on Page 13)

# Pan Am "Handles with Care"



was the smoothest part of the entire journey, door to door. RCA was so impressed they showed Pan Am the recording.

It's a good case to keep in mind when you have an overseas shipment demanding special care. Call your cargo agent, freight forwarder or Pan Am first thing.

### \* What's a G?

A measure of force in which a moving body meets a reacting force equal to its own weight.

Example: the vibration you feel when walking is approximately equal to 1 G.

†Trade Mark, Reg. U. S. Pat. Off.





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**or keys**



**or pine trees**

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is Santa Fe**

No matter what you ship call the nearest Santa Fe Traffic Office and let the "railroad that's always on the move toward a better way" go to work for you.



## Handling Costs . . .

(Continued from Page 38)

people take a look at their overall operation from the vendor on through.

3. **Examine closely the transfer points of materials.** At receiving, it may be practical to transfer materials from cartons to standard containers or from big containers to smaller ones. Or the transfer may be from conveyors to trucks, tractors, or trailers. Make transfers as easy as possible.

4. **Points of accumulation.** Consider receiving, trailer trucks, and storage. Move materials out of processing operations, set up a controlled storage area. Then every square foot of production area will pay back dollars.

5. **Control of all factors.** Production, over-runs, and inventory should be controlled. Schedule materials movements as you would a machine shop operation.

6. **Conversion of movement from**

one type of materials handling system to another. There are many things which can be done in engineering the layout to help with this type of movement.

7. **Perimeter feeding.** A new concept of stocking, this system calls for delivery of components to the outer perimeter of the machines or assembly operations. The materials flows from the outside into the work area.

8. **Plan for 75 per cent utilization of all equipment or a system.** Now generally, when you talk about setting up a materials handling system, your people will discuss only the unusual jobs. The things uppermost in their minds are the exceptions—why a piece of equipment will not do the job. The machine tools or the processing equipment in almost any plant work only 60 to 70 per cent efficiently. Therefore, if you can

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### NARW Elects New Officers



New officers of the National Association of Refrigerated Warehouses are shown (l. to r.) W. B. Haggerty, president, Tampa Cold Storage and Warehouse Corp., Tampa, Fla., vice-president; Garth A. Shoemaker, executive vice president-treasurer, Hygeia Refrigerating Co., Elmira, N. Y., president; and W. L. Baker, vice president-treasurer-general manager, The Seattle Ice and Cold Storage Co., Seattle, Wash., treasurer

### Fork Lift Plant Opens



As part of a multi-million dollar expansion program at Hyster Co., that company has completed a large addition to its manufacturing facilities at the Danville, Ill., plant. Additional plant area totals 115,000 sq ft

handle materials on your system 75 per cent of the time, you have a good system. The other 20 to 25 per cent will have to be carried in some other unusual way.

Most companies shun an analytical approach to their problem. The misapplication of equipment comes about many times when unknown facts or factors enter a problem.

There is a close relationship between the industrial engineering function and materials handling. We need only to take some of the engineer's tools and procedures for adaptation to handling problems.

**1. Flow charts with a diagram.** Develop a flow chart. Show all procedures step-by-step.

**2. A questionnaire-type check list.** This stimulates thinking.

**3. Travel charts.** These give a relationship—the number of movements between various departments.

**3. Travel charts.** These give a relationship—the number of movements between various departments. For instance, take the receiving department. You may need to know how much material is received there, how many times material is moved from receiving to raw materials warehousing, from receiving to the machine shop, from receiving to other areas of the plant. The travel chart will show the relationship between

various departments so the layout can be planned accordingly.

**4. Ratio delay studies.** These are similar to work sampling studies as used by a quality control department. Observe an operation at random times over a specified period. This will give a reliable estimate of time spent.

**5. Elemental standard times.** Several recent publications give standard time data which tells you how many feet per minute a truck will travel. Figures also are available on how long it takes a man

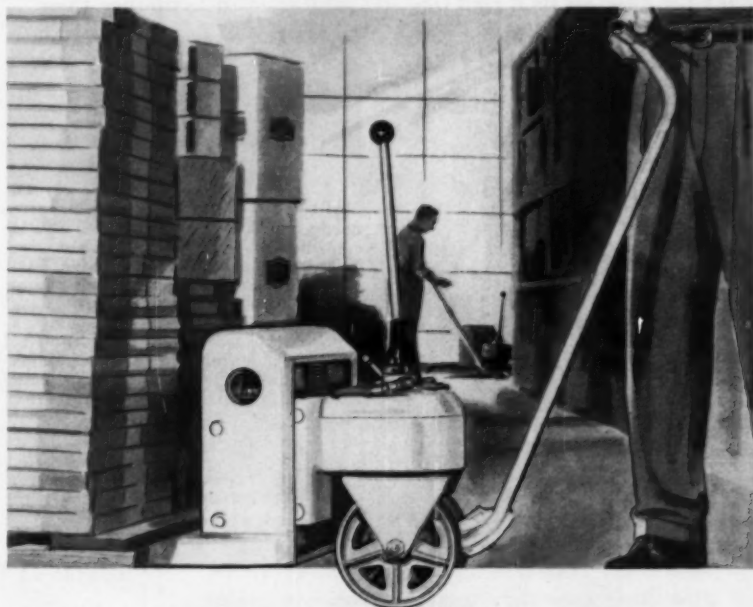
to walk a given number of feet, pick up a package, move it, and set it down.

**6. Motion economy.** Work simplification.

**7. There are other forms for collecting data and facts.** In addition, you can develop some of your own.

**8. There are standard charts for specifications, engineering tables of all types, and many other pieces of literature to fit specific analysis needs. •**

(Resume Reading on Page 40)



#### Sofas Boxed Easily



Bruce-Mayflower Moving and Storage Co. has come up with an answer for storing sofas so that they will remain protected from dust, soil, and damage. The sofas are placed in large, lightweight, 8 ft x 4 ft x 4 ft palletized containers of Ply-Veneer—a paper overlaid veneer panel material. The box with smooth kraft linerboard panel surfaces will not scratch or mar furniture. Klimp fasteners allow quick assembly and knock-down. The Silvatek Division of Weyerhaeuser Co., makes Ply-Veneer

from the ground UP **Colson** builds it better...

Colson pallet trucks the finest you can buy... for quality, ease of operation, and money-saving efficiency. From casters to completion, each part is carefully designed and precision engineered.

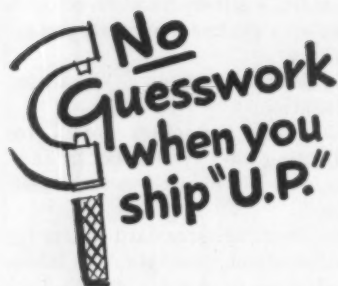
Colson's new 2500 and 4000 lb. capacity single and double face hydraulic leverlift pallet trucks feature exclusive roll-o-cam entry device which eliminates sliding and skidding. Spring-counter balanced handle, simple hydraulic pump and special design make them the easiest handling pallet trucks available. Write for free catalog to find out how you can save when you buy only once by buying the best... Colson!



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## IDP shakes . . .

(Continued from Page 68)

cycle. Management has been freed of a vast bulk of detail work. In this concept of computer usage, the computer handles the routine day-by-day operations, and management makes decisions on exceptions to the norm.

### Multi-Van Container Plan



Multi-van container/trailer system used by REA Express to shuttle consolidated shipments between New York and terminals at Garden City, Brentwood, and Riverhead, Long Island, provides 20-footers for drop-off or pick-up. Forty-foot combinations are used for over-the-road transport. Highway Trailer Industries makes the equipment for maximum interchange of containers

For the first time, Purex has established firm control over our tremendously complicated production and distribution operations. While there are no actual figures that the company can point to at the moment, it is certain that the improved efficiency and firm control achieved through the use of electronic data processing will result in sizable savings.

Purex is now beginning to program the system to control the shipments of our products from the warehouse to the customer, an operation of fantastic complexity. In addition, plans are being formulated to add the complete general ledgers of six subsidiary companies to the computer's memory so that consolidated statements can be made.

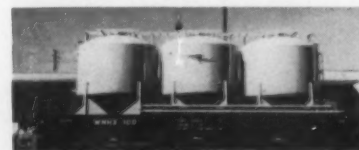
(Resume Reading on Page 72)

### Warehouse Salutes Employees



Three diamond studded white gold wristwatches were presented by Ken-croft Warehouse, Buffalo, N. Y., to employees with 49-years of exemplary service in the organization. R. T. Rycroft, president and an employee of 49 years, presents a watch to Miss Leanore Delaney. Miss Delaney has been with the company 50 years. She is flanked by Miss Emily Linner (left) and Miss Emma Krans, both employees for 49 years

### Pneumatic Tank Car



This pneumatically operated tank car can be unloaded in 30 minutes. It hauls and transfers powdered, granular, and many pelletized dry materials. The 2400 cu ft capacity car mounts three tear drop tanks on a specially built railcar having a 152,000 lb payload. Each tank holds 800 cu ft. The Halliburton Co. is introducing this car which cleans its own tanks as each load is moved



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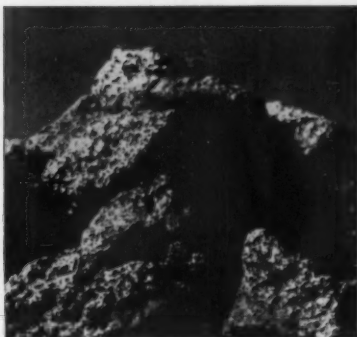
Let your dealer show you the many other features of these better-than-ever trucks. Allis-Chalmers, Milwaukee 1, Wisconsin.

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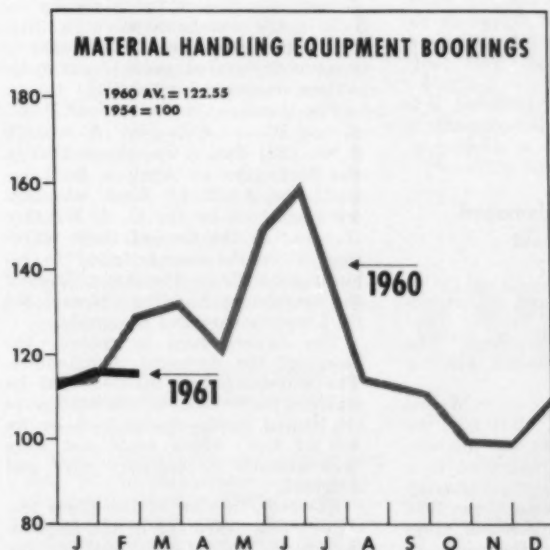


The answer  
to the question  
on page 12

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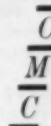
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## WAREHOUSING

Is a warehouse a public utility even though it only serves selected customers?

A court held some time ago that a warehouse company is not a public utility if it restricts its business to selected storers of merchandise.

For instance, in *P— V— C— S— C— v. P— U— C—*, 352 Pac. (2d) 721, a state law was litigated. It provided that a "warehouseman" includes every corporation or person owning, controlling, operating, or managing any building, structure, or warehouse, in which

merchandise is regularly stored for the public generally for compensation.

The question presented the court was whether a warehouse company is a public utility under another state law which provides that a "regular" warehouseman is a public utility.

During the trial testimony was given that the warehouse company's basic purpose was to store apples of its special members who had a vested right to an aliquot part of storage space and to storage services at cost. During a part of the off season the warehouse company rented all its cold storage space to one customer, and during the remainder of off season space was unused and the warehouse company turned down other offers to rent space to outsiders.

This higher court held that since the testimony discloses that the warehouse company did not accept or solicit "outside" business it, therefore, was not a public utility. This court said:

"From the foregoing evidence, it is clear that the warehouse company is not a public utility as a warehouseman. . . ."

### May the owner of damaged goods recover without proving negligence?

The owner of damaged or deteriorated merchandise may recover damages from the warehouseman who stored the goods, without proving negligence.

For illustration, in *W— v. W— W— C—* 353 Pac. (2d) 979, the testimony showed facts, as follows: A man named W— delivered to a warehouse company certain barley for storage. The agreement was that the warehouse company would store the barley and deliver the same on demand of W—. Upon delivery, at a later date to W—, the barley was deteriorated, and its value was 20½ cents per bushel less than when it was placed in storage, and as a result of which W— was damaged in the sum of \$4443.54.

Without requiring W— to prove how the barley was damaged or de-

riorated, the higher court held the warehouse company liable to W—, saying:

"Whether or not the barley . . . went out of condition while in the defendant's (warehouseman's) possession, are not matters material to the allegations."

### How can a warehouseman avoid liability if his warehouse is flooded?

A review of higher court decisions discloses that usually a warehouseman is not liable for goods damaged by flood waters unless the testimony proves that he failed to exercise an "ordinary degree" of diligence and care to prevent the damage. Any neglect to safeguard the stored goods in face of a warning of impending flood danger is sufficient to ultimately result in the warehouseman's liability. His failure to use reasonable care to remove the stored goods from floodwaters results in his liability.

For instance, in the case of *P— B— W— C— v. A—*, 20 S. W. (2d) 633, it was shown that in the first days of April a flood began. On April 13 flood warnings were sent out by the U. S. Weather Bureau. In the face of these warnings a warehouseman failed to remove goods from the lower floor of the warehouse building. Hence, the flood waters damaged the goods.

The owners sued to recover the value of the damaged merchandise. The warehouseman insisted that he was not liable because the damage to the stored goods was caused by an Act of God, which could not have been averted by ordinary care and diligence.

However, in view of the above testimony that warnings of the impending flood had been broadcast, the court held the warehouseman liable.

For comparison, see *M— v. U—*, 131 S. W. (2d) 469, and also, *G— F—*, 32 N.Y.S. (2d) 682. In both of these cases unusual floods were caused by unexpected rising waters which caused damage to stored goods. The warehouseman was held not liable.

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## TRANSPORTATION

### What role does public interest play in granting carrier permits?

Last month a higher court held that a public service commission may issue a new permit to a warehouse and transport company to transport household goods and furniture, if the "public interest" will be benefited.

For illustration, in *B— v. T—* T— and S— C—, 352 Pac. (2d) 240, the testimony showed facts, as follows: A man named B— made application to the Idaho Public Utilities Commission for a permit to transport household goods within the state. Several holders of permits, including the T— T— and S— C—, protested B—'s application on the grounds that the other common carriers in the area are now engaged in transporting household goods. They claimed to provide adequate service.

The testimony showed rapid population growth in the area; permanency of military installations; and lack of aggressive competition in the field of household moving. In view of this testimony, the higher court awarded B— a permit. It said:

"Inasmuch as local services in other types of business activity had increased because of the increase in population, so too, would the demand increase for local household movers, because of the large number of transient-type families living in, and moving in and out of that area."

For comparison, see *M— v. V—* E—, 178 P. (2d) 382. This higher court held that the commission is not charged with the duty of protecting common carriers competing in the open market, or their economic loss or gain. Instead it is required to consider the interest of the public. Then it should determine whether good cause has been shown and a new permit issued.

With respect to the legal definition of the term "public interest," see *P— L— v. F—*, 159 P. (2d) 162. This court said:

"'Public interest' is not susceptible of precise definition. The principle inherent in public interest, requires that 'the people be adequately served'."

### Can a warehouseman collect storage charges for services not specified by the owner?

The higher courts consistently hold that a warehouseman may collect charges for storage, and services rendered on merchandise, not specifically ordered by the owner of the merchandise. However, testimony must show several facts. They are: (1) the owner of the goods was informed that the warehouseman was performing the storage and other services; or, (2) if the owner of the goods either verbally or in writing authorized another person to order the warehouseman to perform the storage or ser-

vices; or (3) if the employee of the owner of the goods ordered the warehouseman to perform the services, without knowledge or authority of the owner of the goods and subsequently the owner ratified or approved the contract; or (4) if a lease contract existed between the owner of the goods and the person who ordered the warehouseman to perform the storage and other services; or (5) if the warehouseman replaces the goods in storage, without knowledge of the owner, for the purpose of safeguarding the goods, as where a building burns and the goods are taken from the burning building and set on the sidewalk.

### What is the actual authority of a public utilities commission?

A review of higher court law suits discloses that in the last 60 years public service commissions have attained a very important part in regulation of affairs both state and national. These commissions are given broad powers in the administration of the affairs submitted to them, and it is practically universally held that in so long as a commission does not fraudulently, arbitrarily or capriciously administer affairs, their discretion will not be disturbed by a court.

Recently a higher court held that a public service commission is an administrative body and not a court and (Please Turn to Page 107)



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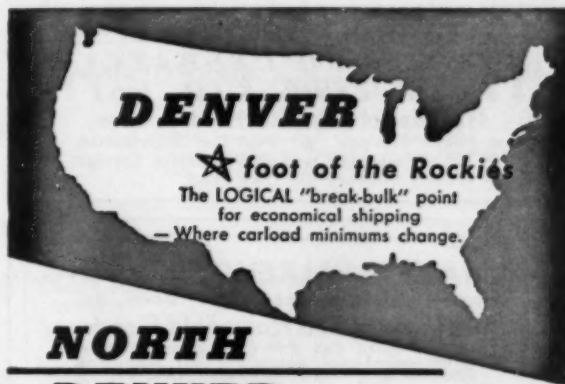
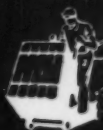
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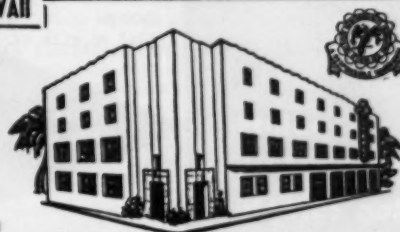
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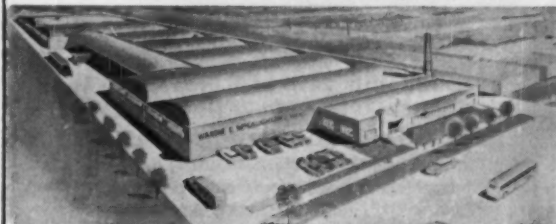
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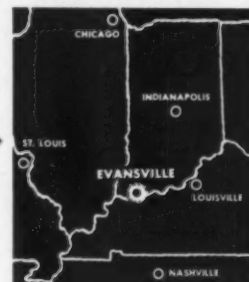
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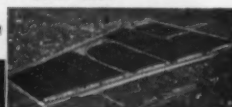
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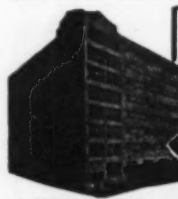
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### MIDWEST TERMINAL WAREHOUSE CO.

2020-30 Walnut Street, Kansas City 8, Mo.

Owned and Operated by the ST. LOUIS TERMINAL WAREHOUSE CO., ST. LOUIS, MO.

For Shippers' Convenience, States, Cities

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CHESTNUT 1-8394

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- Long-time employees
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It all adds up to...Business Making Service

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ST. LOUIS...The City Surrounded by the United States

LONGEST ESTABLISHED MERCHANDISE WAREHOUSE IN ST. LOUIS  
UNDER CONTINUOUS AND IDENTICAL OPERATION

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2000-2028 NORTH MAIN STREET

- Single & Multiple Floor Facilities. F.M. Insured.
- Burglar & Sprinkler protection.
- Controlled temperature and humidity cooler rooms.
- Member—A.W.A.

"Compare Service — Cost and Facilities"

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Merchandise Storage and Distribution

### RUTGER STREET WAREHOUSE, INC.

Track Connections with All  
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A.D.T. Burglar & Sprinkler Alarms  
200,000 Sq. Feet of Space  
BONDED

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of Missouri, Inc.

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Complete Warehouse Service. 200,000 square feet space. Pool Car Distributing and Forwarding Service. A D T Burglar and Sprinkler Alarms. Bonded. Served by Missouri Pacific & Frisco RR. Available fleet of Modern Trucks, ample car loading sidings. Large Covered Truck Dock.

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"Serving industry for more than 30 years"

**OVER 1,000,000 Sq. Ft. of WAREHOUSE Space**

Located right in the midst of business

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Pool car distribution  
Reforwarding storage in transit  
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General Offices • 826 Clark Ave. • St. Louis 2, Mo. • MAin 1-4927



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HARRISON 7-3688

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Agents: ALLIED VAN LINES, Inc.

**GENERAL WAREHOUSE CORP.**

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MERCHANDISE AND HOUSEHOLD GOODS STORAGE  
POOL CAR DISTRIBUTION

We specialize in Transit Storage

Member AWA, NFWA, MOWA, ACW

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Phone: 342-4269 Tlfp: Om 148

**CENTRAL STORAGE and VAN COMPANY**

814 North 14th St., Omaha 2, Nebr.

The only exclusive pool car, pool truck and local delivery center in the Omaha marketing area. Located on C&NW Railroad. 4 car capacity, 7 truck docks. Exclusive agent for Emery Air Freight.

See Omaha Central Warehouse Company advertisement on this page

## OMAHA, NEBR.

**FIDELITY STORAGE & VAN CO., INC.**

1109 Howard St. Omaha, Nebr. 342-0288

Merchandise — Pool Car Distribution — Household Goods  
60,000 SQ. FT. RAIL SIDING

EXPERT SERVICE ESTABLISHED 1913

Agent, Aero Mayflower Transit Co.

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**STORAGE & MOVING COMPANY**  
1024 Dodge Street Omaha 2, Nebraska

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Member of N. F. W. A. and A. W. A.

Represented by Allied Distribution Inc.

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WA 2-3567

New York 30  
11 W. 42nd St.  
PE 6-9967

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**THE GREAT WESTERN HEARTLAND**

**LINCOLN and GRAND ISLAND**

**MAY BE YOUR BEST DISTRIBUTOR POINTS**

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**WRITE, WIRE OR CALL**

**TODAY**

**MERCHANDISE STORAGE**

POOL CAR DISTRIBUTION  
EXCELLENT "IN TRANSIT"  
POINT  
FLEET OF 40 TRUCKS

ALSO  
HHG MOVING  
RIGGING & HEAVY  
HAULING

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ESTABLISHED 1889

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311 West 4th St.  
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"Satisfactory Service Since 1887"

Agt. Allied Van Lines, Inc.

Modern sprinklered whse. on trackage

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William A. Watts, V. P. & Gen. Mgr.

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801 So. 15th St., Omaha, Nebr., JACKSON 4269

Merchandise storage, pool car distribution, local delivery service. Central location, Experienced personnel, Ample truck docks & two R. R. Sidings, 160,000 sq. ft. heated warehouse space, 5000 sq. ft. of office & display space, ADT sprinkler & burglary system throughout. Low ins. rates.

See Central Storage and Van Co. advertisement on this page

## MANCHESTER, N. H.

New Hampshire's Largest Warehouse  
(Privately and State Bonded)

**McLANE & TAYLOR CORP.**

Serving a fast-growing, year 'round marketing area.

General Merchandise — STORAGE — Household Goods

Freezer and Cooler Space.

Pool Car Distribution—Storage in Transit.

Private Siding—Boston & Maine Railroad.

Offices: 624 Willow St. Tel. NA 3-3526 and NA 3-3527

## BAYONNE, N. J.

HEmlock 6-5000

**LEHIGH TANK TERMINAL**

Ingham Ave. & 2nd St., Bayonne, N. J.

Facilities: 4,000,000 gallon tank storage capacity. Warehouse and drumming facilities.

Track Connection: Served by Jersey Central Railroad private siding. Up to 16 tank cars—8 cars loaded simultaneously. Tank truck loading facilities. Private truck scale.





**BAYONNE, N. J.**

Phone: Elizabeth 4-5050 TWX: Eliz., N. J. 1045

**WHEELING Warehousing and Distribution**

Fast and efficient service with own fleet of Modern Trucks  
Private siding on C.R.R. of N.J. 100% Palletized Operation.  
A.D.T. Burglar Alarm.

**Wheeling Transportation, Inc.**  
Foot of Pier St. Bayonne, N. J.



**MECHANIZED**

From industrial trucks that heft 30,000 pounds of Douglas fir, with ease, to the Delaware Valley's only waterfront bulk-bagging operation... the word for Camden Marine is mechanized.

Count on this strategically located warehouse operation for fast, professional dispatching into the booming industrial East. Access to major turnpikes, linked to two major railroads.

Look to Camden Marine Terminals, the right spot for your cargo. Write for free folder.

**CAMDEN MARINE TERMINALS**

Operated by South Jersey Port Commission  
P.O. Box 129, Camden 1, N.J.

J. W. McGee, General Manager

**CAMDEN, N. J.**

Camden phone: EM 5-6200 Phila. phone: MA 7-2793

**EAVENSON & LEVERING  
DIVISION OF MACK WAREHOUSE CORPORATION**

3rd & Jackson Streets Camden, New Jersey  
**WAREHOUSING DISTRIBUTION**

- \* 400,000 Sq Ft of ideal storage space
- \* Storage-in-transit
- \* Export Packaging
- \* PRSL Siding with 15 car capacity
- \* Ample truck docks
- \* Experienced, well-equipped personnel
- \* Pool car distribution

Other facilities in Philadelphia with an area of 740,000 square feet

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**WHEELING Warehousing and Distribution**

Fast and efficient service with own fleet of Modern Trucks  
Private siding on L.V.R.R. 100% Palletized Operation.  
A.D.T. Burglar Alarm.

**Wheeling Transportation, Inc.**  
1235 Central Ave. Hillside, N. J.



**JERSEY CITY, N. J.**

OLdfield 3-3360 REctor 2-2345 Tilt: JCY 1068

**LACKAWANNA WAREHOUSE CO., INC.**

629 Grove St., Jersey City 2, N.J.

Facilities: 1,182,000 sq. ft. Modern Building, reinf. concrete and steel. Frpl. sprinklered. ADT Burglary and Holdup protection. Track Connections: Lackawanna RR. Cap. 52 cars. Storage-in-Transit. Cartage: 54 tk cap. Class of Business: G. M. Pool Car Dist. Member: AWA, NJMWA, WA of PNY, NJMTA.



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MAIN OFFICES: 155 WASHINGTON STREET, NEWARK, N. J. — Mitchell 3-2222  
PERSONALIZED WAREHOUSING & DISTRIBUTION FOR OVER 25 YEARS

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SERVING AMERICA'S FINEST FIRMS IN THE EASTERN MARKET

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Bigelow 3-7200 REctor 2-3338 Tilt: NK 1073

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DON'T DELAY, CALL ...



**EDGAR'S WAREHOUSES**

GENERAL OFFICES:

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Our 42nd Year

N. J. Phone: ARmory 8-4114-4115  
N. Y. Phone: OHelsea 2-4408

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Merchandise Warehousing and Distribution. Centrally Located for New York, New Jersey and Beyond. Away from Congested Areas—Adjacent to All Main Highway Arteries. Private Sidings Erie RR & D.L.&W.

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Market 3-7463

**LEHIGH PORT NEWARK WAREHOUSES CORP.**

Building 5, Foot of Doremus Ave., Port Newark, N. J.  
Facilities 204,000 sq. ft. Modern steel frame building, sprinklered, heated. Track connections P.R.R., C.R.R. of N.J. and L.V.R.R.—SIT—Lehigh Transportation serving metro. area—G.M. import & export. Deep water berth. Free lightage.



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Phone: Elizabeth 4-5050 TWX: Eliz., N. J. 1045

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Fast and efficient service with own fleet of Modern Trucks  
20-car siding on P.R.R., L.V. & J.C.R.R.—Storage in Transit  
100% Palletized Operation—A.D.T. Burglar Alarm.

**Wheeling Transportation, Inc.**  
Port Street Port Newark, N. J.



**SECAUCUS, N. J.**

UNION 6-2306

**WILMOD WAREHOUSES INC.**

280 ROUTE 3, SECAUCUS, N. J.

Located in the heart of the Commercial Zone of N. Y. C. Low distribution rates.  
*We invite your inquiry.*

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ESTABLISHED 1919

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Covering New York & Delaware Valley Areas

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and Firms are Arranged Alphabetically

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Main 4-7200



### Dock Warehousing And Bottling Center, Inc.

Pier 41, Foot of Van Dyke St., Brooklyn, N.Y.

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STORAGE OF GENERAL MERCHANDISE  
10 GIANT FLOORS 200,000 FT. OF SPACE  
MODERN LOADING AND UNLOADING FACILITIES  
PRIVATE VAULTS FOR LIQUORS  
COOLER AND TEMPERATURE CONTROL SPACE AVAILABLE

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FOR WORRY-FREE MOVING & STORAGE



### AMERICAN'S 3 WAREHOUSES BUFFALO, N. Y.

AMERICAN HOUSEHOLD STORAGE COMPANY

## BUFFALO, N. Y.

Telephone: TR 7-2411 Teletype: BU 267

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STORAGE AND DISTRIBUTION  
NYC Siding. Reciprocal switching

Members: American Chain of Warehouses, Inc.  
New York and Chicago  
American Warehouseman's Assn., Chicago

General Offices: 261 GREAT ARROW AVE., Buffalo 7

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NEW ONE-STORY WAREHOUSES



Ample truck dock and parking facilities—near N.Y. State Thruway. 34 car spots. Erie-Lackawanna R.R. Free reciprocal switching. Sprinklered, heated space, 20 ft. clear height.

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MERCHANDISE STORAGE AND DISTRIBUTION  
MODERN BUILDINGS—PRIVATE SIDING

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- 300,000 sq. ft.—concrete & heated
- Near N. Y. Thruway & St. Lawrence Seaway
- 2 acre yard with 16 truck doors
- 10 Erie-Lackawanna car spots—private siding
- Reciprocal switching—intransit storage
- ADT Sprinklered Watchman
- Specialize in Distribution Center Warehousing

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Teletype BU-223

TL 3-3703 Day  
TT 4-7484 Night

## BUFFALO, N. Y.

Private Sidings  
NKP and Erie RRs



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... HAVE SOMETHING IN STORE for you ...  
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### MERCHANDISE STORAGE

Storage in Transit and Pool Car Distribution

FIREPROOF BUILDINGS  
LOW INSURANCE RATE

N.Y. CENTRAL SIDING  
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90,000 Sq. Ft.—Sprinklered

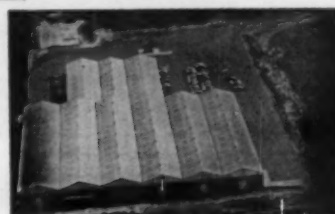
Daily Distribution in

Metropolitan N. Y.,

8 Counties in N. J.,

and all

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15 Car R.R. Siding—40 Bay Truck Terminal

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ELmira 9-3856

### LEHIGH-HORSEHEADS WAREHOUSE CORP.

Horseheads Industrial Center, Horseheads, N.Y.  
T. R. Clark, Manager

Facilities: 1,600,000 sq. ft. Modern one-story buildings, cinder block construction, sprinklered.  
Track Connections: Served by 4 railroads—Lehigh Valley, DL&W, Erie, Pennsylvania. Ideal transit point for Eastbound and Westbound. Ample rail sidings and truck docks. Industrial and warehouse rental available.



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STORAGE AND VAN COMPANY  
NEW YORK CITY



House to house moving round the World of Household Effects and Art Objects in Steel and Wood Lift Vans Safety for Foreign Shipments.



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MOVING • STORAGE • EXPORT PACKING

To & From Everywhere—

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Member United Van Lines

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COlumbus 5-4600



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WAREHOUSING • PACKING  
SHIPPING • TRUCKING • Local Agent ALLIED VAN LINES  
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Storage Warehouse  
Main St., East of Circle St., Rochester 7  
General Merchandising Storage—Distribution  
Pool Car Distributed—Reshipped  
U. S. Custom Bonded—Storage—Drayage  
Household Goods Moved—Stored—Shipped  
Direct R.R. Siding N. Y. Central in the Center of Rochester

SYRACUSE, N. Y.

200,000 SQUARE FEET

### GREAT NORTHERN WAREHOUSES, INC.

Every Modern Warehousing Service  
for  
Merchandise and Household Goods  
2 Private Rail Sidings

Daily, Store Door, Motor Freight Service To All New York State Points  
Member: American Chain Of Warehouses

SYRACUSE, N. Y.

DISTRIBUTION  
MOTOR FREIGHT LINES  
PRIVATE RAIL SIDINGS

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COMPLETE MERCHANDISE AND HOUSEHOLD GOODS STORAGE  
SERVICES

Represented by  
DISTRIBUTION SERVICE, INC. Members  
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"Service Is Our Most Important Product"

"Syracuse's Most  
Modern Warehouse"  
One Floor Operation

Concrete and Steel  
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648,000 Cu. Ft.

5 Car Private  
N. Y. Central Siding

6 Truck Dock

Pool Car Distribution

Sprinklered & Armour  
Burglar System

Lowest Insurance Rates

Store Door Delivery

Modern Office Space

SYRACUSE, N. Y.

**MERCHANDISE STORAGE:** 100 Spencer St.—86,000  
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Phone GRanite 4-4661

Represented by Allied Distribution Inc.

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Household Goods Moving, Storage, Packing,  
Shipping. Prompt service for any point in  
Westchester County

Member N.Y.F.W.A.—N.F.W.A.



CHARLOTTE, N. C.

Established 1908

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Office and Warehouse, 926 Tuckaseegee Road  
MERCHANDISE STORAGE ONLY, POOL CAR DISTRIBUTED  
MOTOR TRUCK SERVICE LOCAL AND DISTANCE  
PRIVATE RAILROAD SIDING, SPRINKLERED

CHARLOTTE, N. C.

Telephone: EDison 3-9671

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#### MERCHANDISE STORAGE

Concrete & steel building, 20,000 sq. ft.  
Sprinklered, automatic fire alarm. Unlimited  
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Distribution of Merchandise pool Cars.  
Member of SEW&MA

RALEIGH, N. C.

Ph: TE 4-0787

Est. 1919

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MERCHANDISE, COOLER, HOUSEHOLD GOODS STORAGE  
POOL DISTRIBUTION—TRUCKING SERVICE

Represented by American Chain of Warehouses  
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YUkon 6-7722 Harrison 7-3680  
Member: AWAM—ATA—NCMA—NCH&WA—SEW&MA—SeMC

RALEIGH, N. C.



SPRINKLERED • LOW INSURANCE RATES • PRIVATE SIDING  
OVER 2,000,000 CU. FT. SPACE

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Downtown Boulevard Raleigh, North Carolina

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### Union Storage & Transfer Company FARGO, N. DAK.

General Storage—Cold Storage—Household Goods  
Established 1906



Three warehouse units, total area 108,500 sq. ft.; of this 38,500 sq. ft.  
devoted to cold storage. Two buildings sprinkler equipped. Low insur-  
ance costs. Spot stocks, pool car distribution. Complete warehouse  
services. Fargo serves North Dakota and Northwestern Minnesota.

Offices 806-10 North Pacific Ave. AWA-NFWA-MNWWA-ACW-AVL

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### COTTER MERCHANDISE STORAGE COMPANY

133 East Center Street P. O. Box 808  
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Warehouse facilities: Six buildings allow space for all  
types of storage. Our own trucks give prompt delivery.  
An experienced staff backed by 79 years experience.



Represented by  
CHICAGO 4 NEW YORK 36  
592 E. MICHIGAN AVE. ALLIED DISTRIBUTION INC. 11 WEST 41ND ST.  
WA 6-6736 PE 24 6-947



and Firms are Arranged Alphabetically

## CINCINNATI, OHIO

## Complete Facilities



General  
Merchandise  
Freezer  
Storage

### CINCINNATI TERMINAL WAREHOUSES INC.

LEASEHOLD, OFFICE,  
WAREHOUSE, DISPLAY SPACE  
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Quick Blast Freezing • Mechanized Efficiency  
Under Cover Protection • Strictly Fireproof  
ADT Protection • Low Insurance Rates  
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Over 9,000,000 Cubic Feet of Space  
11 Car Railroad Switch in Building  
65 Loading Docks for Trucks  
Pool Car Distribution  
Long Distance Truck Terminal  
Member: AWA, OWA, NARW, RRF

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Cleveland 14, Ohio

P. O. Box 5310  
EXpress 1-4970

Re-packing Specialists

Storage

Pool Distribution

## CLEVELAND, OHIO

Member of A.W.A.—O.W.A.

WATER, RAIL and  
TRUCK FACILITIES

## LEDERER TERMINALS

Offices: FOOT OF E. 9th ST.



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### NATIONAL TERMINALS CORPORATION

1200 West Ninth Street, Cleveland 13, Ohio  
Four Modern Warehouses in Downtown Section  
General Storage, Cold Storage, Office space and Stevedoring  
at our waterfront docks

## CLEVELAND, OHIO

### NEAL-CALDWELL

Quality Merchandise Storage Services  
CLEVELAND - TAMPA  
7119 Carnegie Ave. 209 So. Franklin St.  
EM 1-2828 Phone 2-2796

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250,000 sq. ft. Storage Space

### CENTRAL OHIO WAREHOUSE CO., INC.

412 McCoy St. • Columbus 3, Ohio • CA 8-3571 • TWX CL-264

- Centrally located
- Low Insurance Rate
- Fast, economical local delivery service
- Pool Car Distribution
- General Storage
- Cold Storage
- Private sidings

One of Central Ohio's Largest Warehouses



600,000 sq. ft. Devoted to Serving You  
Covers Ohio Through its Capital City  
COLUMBUS TERMINAL WAREHOUSE CO., INC.  
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Modern warehouse and storage facilities  
ADT System. Private double track siding.

Represented by  
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WA 2-3547

New York 36  
11 W. 42nd St.  
PE 6-6967



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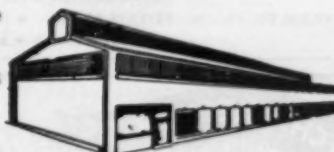
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Cooler, Freezer and General Merchandising Storage  
Deep Water Dock. Private Siding  
on C.M.St.P. & P.R.R.

## Within the Law . . .

(Continued from Page 83)

that no court should substitute its judgment for that of the commission.

For illustration, in A—T— I— v. H— F—, 337 S. W. (2d) 5, the testimony showed these various facts: Certain common carriers filed a petition with the Public Service Commission to transfer a certain number of certificates of convenience and necessity, which had been granted them, to the A—T—I—.

The commission refused to transfer these certificates. The lower court reversed the commission. An appeal was filed with the higher court, which approved the commission's verdict, saying:

"This body . . . is an administrative body and not a court, and we, as a court, should not substitute our judgment for such an administrative body."

This higher court also held that in issuing certificates of convenience and

necessity to motor carriers, the Public Service Commission must take into consideration predominant consideration of 'need' of people, and not that of contending and competing carriers operating over the highways.

### What is the law concerning fixed fees for common carriers?

A higher court recently held that a compensatory fixed fee, charged by a common carrier for regular periodic pickup stops at the shipper's place of business, is not unreasonably discriminatory.

For instance, see R—E— A— v. W— P— S— C—, 354 Pac. (2d) 711. The P— S— C— authorized issuance of a permit to the U— P— for operation as a common carrier in western Washington and part of eastern Washing-

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ton. The permit covered the intercity carriage of packages not exceeding 50 lb or 108 in. in length and girth, combined. The order also approves U—P—'s proposed rates, including a \$2 weekly service charge to be paid by all shippers desiring to have U—P—'s trucks make regular daily stops at the shippers' places of business.

Issuance of this order was protested by several other common carriers. They charged rate discrimination, unfair competition, and unlawful common carriage.

Nevertheless, the higher court approved the order, saying:

"In the instant case no contention has been made that the cost to U—P— in providing a daily pickup service to those shippers who desire it will be other than constant. Nor is it urged that the \$2 per week, the proposed charge for this service, is an unreasonable amount. The fact that U—P—'s services will be limited to the carriage of small parcels does not preclude it from being a common carrier."

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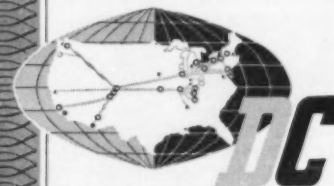
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tell us*

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*ends their  
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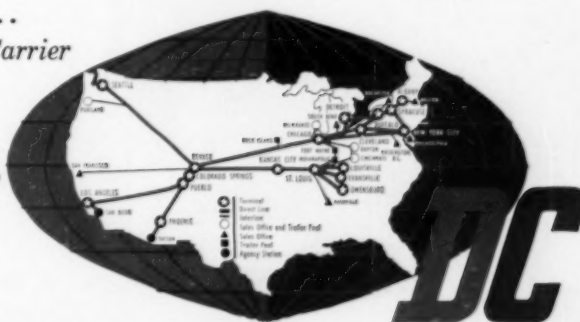
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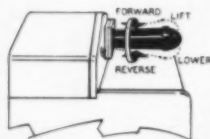




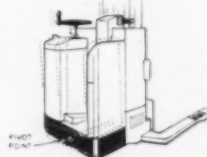
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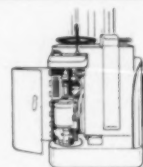
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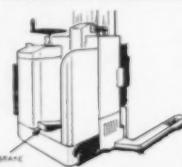
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